Remarks ON PUERPERAL ECLAMPSIA.

Being the Introduction to a Discussion at the Midland Medical Society on Jan. 27th, 1915,

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MR. PRESIDENT, LADIES, AND GENTLEMEN,—For the purposes of this discussion I will divide the subject into the following sections: I., Prophylactic Treatment; II., Treatment of the Fits and of the Toxæmia; III., Obstetrical Treatment.

I.—PROPHYLACTIC TREATMENT.

As regards prophylactic treatment there can be no doubt that in many cases in which the disease is threatened it can be warded off by appropriate means, and success depends on an early recognition of symptoms of the pre-eclamptic state; these are numerous, but I should say that the most constant and important are: albuminuria, persistent headache, and œdema. Other symptoms may be disturbances of vision and hearing and vomiting. One prodromal symptom which is not common, but which when it occurs is, in my opinion, of most unfavourable prognostic import, is severe epigastric pain. The albuminuria associated with eclampsia, in which there is usually a large amount of albumin present, is practically confined to the later half of pregnancy, cases of eclampsia before then being rare. Pronounced albuminuria in the later months is a dangerous complication for both mother and child, and the danger of the condition is greatly increased by the fact that it is so often unrecognised and untreated until the sudden onset of a convulsion calls attention to the case.

It should be made a rule to examine the urine of every pregnant woman in the latter half of pregnancy, and the examination should be repeated at intervals, shorter as full term approaches; if this rule were adhered to the death-rate from eclampsia would be greatly reduced. It should always be borne in mind that a haze of albumin may be due to mixture with vaginal discharge, so that if albumin is present in the specimen passed by a patient we should never base a diagnosis or treatment on that, but should examine a catheter specimen. If, on the other hand, there is no albumin in the specimen voided by the patient it will not be necessary to pass a catheter. If albumin is present a microscopical examination and an estimation of urea are advisable. Statistics show that this disease is more likely to occur in primiparæ, and in my experience it has seemed that its occurrence was more to be feared in well-developed women who had been in the habit of taking a large amount of exercise and eating much solid food.

When albumin is found in considerable quantity in the urine of women in the later months the case should be taken in hand at once. In the first place the patient should be confined strictly to bed, and it is a very good plan to commence the treatment by giving nothing whatever but water for the first 48 hours. Afterwards milk, well diluted, may be given, and the diet should be limited to that until there is distinct improvement in the secretory function of the kidneys. Free purgation is essential, and for this purpose 30 gr. of pulv. jalapæ may be given, or sodii sulph. ℥i., in water ℥ii., every two hours, until free purgation is produced. Rectal injections of normal saline may be given after the bowels have been well emptied, or saline may be given sub cute. If in spite of this treatment the renal secretion does not improve, or if prodromata of eclampsia come on, the difficult question of induction of premature labour presents itself. On the whole, I am inclined to advise that labour should not be induced. I have seen some most satisfactory cases in which the treatment already set out has been followed by spontaneous delivery without the occurrence of eclampsia, even when the patient has seemed to be on the verge of an attack.

II.—TREATMENT OF THE FITS AND OF THE TOXÆMIA.

The practitioner is generally sent for as soon as a fit has occurred, and in some cases it will happen that there will have been no prophylactic treatment because the patient had not been under medical care, and neither she nor her friends will have suspected that anything was wrong until they are alarmed by the occurrence of a fit. The patient should be at once put to bed in a darkened room and preserved from all external causes of irritation as far as possible. An efficient nurse should be obtained, and she should be instructed that if another fit comes on the patient should be watched carefully to see that no harm befall her, as by suffocating in the bedclothes or falling out of bed. During the fit a piece of wood should be placed between the teeth to prevent the tongue being badly bitten. It is a good plan to place one side of the bed against the wall, as the nurse can then more easily control the patient. During the coma which follows a fit the head should be brought to the edge of the bed and turned well over on one side so as to allow saliva to escape and prevent it entering the trachea.

I may say here I am sure that those who have had cases of this kind among the poor will have appreciated the advantages of obtaining admission for them to the Maternity Hospital, which, if only for the treatment of this disease, has proved a most valuable addition to the charitable institutions of the city. If the patient is able to swallow she may be given water, but no food, not even milk, should be given. A quickly acting aperient may be given, and one of the best is croton oil ♏ ii., made up with powdered sugar and placed on the tongue; in addition a copious enema of soap and water may be given, and when this has acted a further rectal injection may be slowly given of 4 ounces of water containing 2 ounces of sulphate of magnesia. If the apparatus is at hand it is also well to wash out the stomach. Poultices to the loin probably encourage action of the kidneys, and at all events can do no harm. I am not in favour of hot-air baths. One of the few methods, in addition to purgation, upon which almost all writers are agreed is the administration of subcutaneous or intravenous injections of saline; chloride of sodium ℥i. to the pint, or, better still, ℥i. each of chloride and acetate of sodium; the salt may be obtained ready for use in glass containers, and Horrocks's small saline infusion apparatus is in my opinion the best and simplest, and should be carried in every midwifery bag.

Before proceeding to discuss the obstetrical aspect of the question I will refer briefly to some of the numerous other methods which have been advocated for dealing with the fits and toxæmia,

and I hope that we may hear their virtues or faults described in the discussion.

Chloroform.—If any operative interference is contemplated, even such a small procedure as puncture of the membranes, chloroform should be given, but I am entirely opposed to the method so frequently adopted of attempting to control the convulsions by its continuous or intermittent administration.

Morphia.—This treatment has been extensively advocated of late years; it is given by hypodermic injection in an initial dose of ½ grain and subsequent doses of ¼ grain until a total amount of 2 grains has been reached. I have tried it, but have not been convinced of its advantages, and have not used it lately, and I would say the same of *venesection.*

Thyroïd extract in doses of 30 to 40 grains has been suggested by Nicholson, of Edinburgh, who reports good results from its use.

Nitro-glycerine in subcutaneous injection up to 5 minims has been tried with successful results by Dr. McCarthy, one of our past presidents, and I have no doubt some of those present may be able to speak of its use.

Veratrum viride has been extensively used in America, and recently Haultain, of Edinburgh, has brought forward several successful results from the hypodermic injection of veratrone. This remedy is said to be particularly indicated in cases of high pulse tension.

Pilocarpine has been extensively used, but on account of its tendency to increase bronchial secretion it is, in my opinion, a dangerous drug.

Oxygen inhalation in cases where cyanosis is a marked symptom would be highly desirable.

Cold baths are said to be useful in cases in which hyperpyrexia is a marked symptom; this is a not infrequent complication of eclampsia, and is one of bad prognostic import.

Decapsulation of the kidneys and *lumbar puncture* have both been advocated and practised, but only to a limited extent, and apparently without any striking success.

III.—OBSTETRICAL TREATMENT.

There have been many differences of opinion revealed in the methods of treatment we have already been considering, but when we enter on the consideration of the obstetrical treatment we might describe the authorities as being divided into two hostile camps, their actions depending in a large degree on the views they hold as to the causation of eclampsia. The one, which I may call the Rotunda school, believes that the toxin is elaborated from the food taken in by the mother owing to some faults in her metabolism. The other, or what I may call the German school, considers it to be due to the fœtus, and has advanced the theory recently that the symptoms are due to placental albumin finding its way into the maternal blood-stream in quantities greater than can be dealt with at the time by the antibodies which are elaborated to deal with it. It is on the presence of these antibodies in the maternal blood that Abderhalden's serum test for the diagnosis of pregnancy is based. Those holding the first view advise little or no interference with the process of labour; while to those holding the second no methods are too radical—induction of labour, accouchement forcé, vaginal and abdominal Cæsarean section being each advised in particular cases.

Personally, if labour has started and can be terminated quickly under an anæsthetic by forceps I should not hesitate to interfere, but the difficult cases are those in which severe eclampsia is in progress, fit succeeding fit, with no lucid interval, and in which there is no sign of labour, the os remaining closed and the cervix not taken up.

I have treated cases of this kind on both the expectant plan and on the lines of active interference. In an article on the treatment of eclampsia which I wrote three years ago for Latham and English's "System of Treatment" I stated that, on the whole, I thought that the results from interference were slightly better than those obtained when no steps were taken to evacuate the uterus; since then, as a result of further experience of the policy of non-interference, I am inclined to modify those views, and the results in the last case which was under my care were so striking that I may perhaps be pardoned for quoting it.

The patient was admitted to the Queen's Hospital, Birmingham, on Dec. 1st last on the recommendation of Mr. Sydney E. Price, of Dudley Port. She was a primipara, 28 years of age, well developed, and in the seventh month of pregnancy; she had been having fits for about 48 hours and had had more than 80 altogether.

On admission the patient was œdematous, comatose, and her heart-beat was 160 and the pulse uncountable at the wrist. She was given an enema and subsequently a rectal injection of ℥ii. magnes. sulph. in water. Two pints of saline were then injected slowly into the submammary region. She was admitted at 1 A.M. No obstetrical treatment was adopted, and at 7.30 A.M. she delivered herself of a stillborn male child by the breech; the placenta did not come away and had to be removed by hand. During the day she had another subcutaneous saline and mag. sulph. injection by rectum every six hours. She remained completely comatose for 36 hours, then slowly recovered consciousness and began to pass urine, and left the hospital well on the ninth day after admission.

This case was a striking illustration of the success of this line of treatment, which was carried out entirely by Miss Hemingway, my house surgeon, to whose persevering and careful attention the patient largely owes her life. If we decide on an active line we have a large number of measures open to us, and I will briefly consider these. They are puncture of membranes; bougies; packing the cervix and vagina; tents; rubber dilating bags; digital dilatation or dilatation by Bossi's dilators, followed by version or forceps; deep incision of the cervix, including the so-called vaginal Cæsarean section; and abdominal Cæsarean section.

Puncture of the membranes can be done with little disturbance of the patient, and is a harmless proceeding; it rapidly diminishes intrauterine tension, but as a means of inducing labour it is very uncertain in the time it takes; if done, every antiseptic precaution should be taken.

As regards the other methods, I would say emphatically of the slow ones (under which I include bougies, tents, packing of the cervix and vagina, and rubber dilating bags, including that of Champetier de Ribes) that they are contra-indicated in the treatment of eclampsia, and if there is one thing about which I am convinced in this question it is that interference, if decided upon, should be by rapid methods under anæsthesia, and I would select dilatation by Bossi's dilator or vaginal or abdominal Cæsarean section. I think that, on the whole, for this class of case the form of active treatment likely to be least prejudicial would be abdominal Cæsarean section, but I feel convinced that if a good trial be given to the milder methods it will be found that the results will be better than those obtained by the most heroic operative procedures.

EXPERIMENTAL PURPURA.

(Second Communication.)

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IN a preliminary communication by one of us (Ledingham [1]) to this journal on June 13th, 1914, the production of purpura hæmorrhagica in guinea-pigs, after inoculation with an antiserum prepared by immunising rabbits with guinea-pig blood plates, was placed on record. The present paper deals mainly with conjoint work carried out in June and July of last year, together with additional experimental data since obtained by one of us (L.) in the absence of the other (B.) on military service. The blood changes in guinea-pigs inoculated with anti-plate serum have been followed out in detail, and we propose in the first place to submit data on this point. A description will follow of experimental purpura in the rabbit and rat induced by inoculation with their respective anti-plate sera.

Blood Changes in Guinea-pigs after Inoculation with Anti-guinea-pig-plate Serum.

Notes on technique.—The blood plates were counted in a Thoma-Zeiss chamber, the blood from the ear being received into citrate solution containing brilliant cresyl blue which showed up the blood plates very clearly. The figures for the plate content per c.mm. obtained by this method in a series of normal guinea-pigs were as follows: 856,000, 752,000, 340,000, 640,000, 672,000, 688,000, 590,000, 696,000, 664,000, 592,000 (the latter four obtained from the same animal on four successive days), 592,000, and 584,000. The average of nine animals works out about 638,000 per c.mm. The hæmoglobin was estimated by Haldane's instrument. Attempts were also made to obtain coagulation times, but as we have not satisfied ourselves that the methods employed yield reliable results, at least so far as the guinea-pig is concerned, we refrain at present from alluding to them. The statement in the preliminary communication that the clotting is delayed rested entirely on observations of the bleeding time after puncture. Prolongation of the bleeding-time after puncture of the ear vein is a very marked feature in experimental guinea-pig purpura (as Duke asserts to be the case in human purpura), but this function may prove to have no direct relation to the coagulation time as ordinarily understood and calculated.

The three animals, B 3, B 4, and B 5, whose blood changes, &c., have been followed daily, received each one dose of anti-plate serum (1·5 c.c.) subcutaneously immediately after the control normal samples had been taken. The animals were purposely chosen of large size (over 400 gm.), so that a lengthy observation period would be available before the fatal conclusion (or possibly recovery) resulted. It had previously been determined that in animals of 250 gm. a dose of 1 c.c. of a particular batch of anti-plate serum had produced death in three, four, or five days with typical purpuric lesions. The data obtained from these three large animals, together with notes of the general condition, are found in Table I. (see p. 312).

[1] Ledingham (1914): The Experimental Production of Purpura in Animals, &c., THE LANCET, vol. i., 1914, p. 1673.

Remarks on Table I.—It will be observed from the table that two of the animals died in 4 and 8 days respectively, while the third animal (B 3), whose initial weight was 450 gm., made a complete recovery after exhibition of purpuric skin lesions. On July 14th—i.e., 36 days after the first dose—it received a second dose of 2 c.c. of the serum. The reaction to this second dose was very slight, the blood plates only, showing a marked fall, while the purpuric skin spots were few. It is impossible here to analyse the blood changes in detail, but certain points deserve notice. 1. The total leucocyte count is not appreciably affected, though there is a distinct tendency to relative lymphocytosis (see the column of differential counts). 2. The blood plates are the elements which suffer the earliest and promptest reduction. Except in the case of B 5, which showed an abnormally low initial plate content, the plates fell to one-sixth to one-tenth of their initial figure. In animal B 3, which recovered, the rapid regeneration of red cells and hæmoglobin is well seen. In the last two columns data are appended with reference to the presence of hæm-agglutination in the shed blood, the minute changes in the red cells, and the general condition of the animals.

Post-mortem appearances of the above three animals. B 3.—Killed for examination on July 18th. A few skin hæmorrhages present at site of last inoculation. A few groups of faded punctiform hæmorrhages in stomach wall. No petechiæ on heart or lungs. Lymph glands not of hæmolymph character. Urine not stained with hæmoglobin.

B 4.—Dead June 16th. This animal had shown numerous skin hæmorrhages during the early days following inoculation of the serum. At necropsy these had faded and skin hæmorrhages were found only in the neighbourhood of the inoculation site. The red colour of the lymph glands was disappearing. Several hæmorrhages in the lungs and very numerous petechiæ in intestine. Stomach mucosa showed two round patches—one about the size of a sixpence, the other half that size—studded with small punctiform hæmorrhages. There was no ulceration. Liver yellowish. Spleen large, dark red, and friable. Kidneys and adrenals apparently normal.

B 5.—Dead June 12th. Numerous hæmorrhages at site of inoculation and a few scattered about elsewhere. Only a few lymph glands show the hæmolymph change. No hæmorrhages in intestine. Liver pale and yellowish. Spleen greatly enlarged and friable. Urine blood-stained. A few small hæmorrhages in testicles. *Both eyes show cataract.*

Blood Changes in Smaller Animals.

To complete this part of the subject tables are also appended showing the variations in the red cells, blood plates, hæmoglobin, &c., in three guinea-pigs of less weight. Each was inoculated on June 30th, 1914, with 1 c.c. of anti-plate serum subcutaneously. (See Tables II. A, II. B, and II. C).

TABLE II.A.—*Guinea-pig 8.*

Date.	Red cells.	Plates.	Hb.	Weight.
June 30th*	5,744,000	640,000	96%	240 gm.
July 1st	5,944,000	512,000	94%	220 ,,
,, 2nd	5,130,000	320,000	80%	210 ,,
,, 3rd	664,000	98,000	—	200 ,,

Death between 1 and 2 P.M. on July 3rd.

* Received 1 c.c. anti-plate serum subcutaneously.

Notes on blood picture and general condition.—July 1st: Blood picture normal except for one or two red cells showing polychromatophilia. Well-marked hæmagglutination. Pig lively. Distinct infiltrate over abdomen. July 2nd: Some irregularity in shape of red cells. Megalocytes of medium size, fairly numerous, mostly showing polychromatophilia. Some red cell shadows. Pig seems ill. Infiltrate softening. Some skin hæmorrhages. Gums of fairly good colour. July 3rd: Hæmagglutination of shed blood most pronounced. Great irregularity in size of red cells. Megalocytes showing

TABLE I.

Guinea-pig B 3.

Date.	Red cells.	Leucocytes.	Platelets.	Differential leucocyte count. Polynuclears.	Eosinophiles.	Lymphocytes.	Mast.	Hb.	Temperature.	Weight.	Colour index.	Appearance of blood on slide.	Remarks.
June								%	F.	grm.			
8*	7,520,000	17,400	856,000	77·3	1·8	18·8	1·4	96	98·0°	450	1	—	—
9	7,808,000	17,400	680,000	76·4	0·4	22·6	0·4	92	97·0°	410	0·92	—	Pig lively. Firm infiltrate over abdomen.
10	7,024,000	16,400	250,000	64·0	2·0	33·6	0·6	90	98·4°	395	1·0	Hæmagglutination commencing.	Infiltrate more marked.
11	6,256,000	14,800	148,000	56·0	1·5	42·0	0·5	76	99·0°	375	0·98	Hæmagglutination marked.	Animal ill; numerous skin hæmorrhages present.
12	3,968,000	14,400	180,000	—	—	—	—	62	99·0°	380	1·21	—	Animal very ill; infiltrate softening.
13	1,952,000	16,400	80,000	40·0	3·5	50·5	1·0	36	99·4°	400	1·4	Poikilocytosis; micro- and macrocytes; polychromatophilia; normoblasts and megaloblasts.	Condition unchanged.
14	2,924,000	16,200	398,000	39·0	4·5	56 0	0·5	30	99·8°	390	0·9	—	Much livelier; infiltrate disappearing.
15	2,064,000	20,400	368,000	38·0	2·3	61 6	1·0	50	98·6°	380	1·8	Hæmagglutination no longer present.	Condition good.
16	2,960,000	25,000	472,000	56·6	3·2	40·5	0·5	66	98·4°	—	1·7	Nucleated red cells, 3·0%.	,,
17	4,336,000	24,200	428,000	42·0	1 0	57·0	—	80	99·8°	360	1·4	,, ,, 2·3%	,,
18	4,400,000	16,200	592,000	32·5	0·5	66·0	1·0	86	98·0°	370	1·4	,, ,, 1·0%	,,
19	4,544,000	18,400	436,000	42·0	—	57·0	1·0	90	100·0°	355	1·5	,, ,, Nil.	,,
20	4,240,000	14,200	624,000	32·6	0·3	67·3	—	94	98·4°	360	1·7	—	,,
22	4,920,000	16,400	720,000	51·0	0·3	47·6	0·6	100	98·4°	360	1·5	—	,,
29	5,520,000	8,800	896,000	46·0	0·5	54·5	—	100	99·8°	350	1·5	Except for some polychromatophilia blood picture is normal.	,,
	Interval of 3 weeks.												
July													
14†	5,962,000	—	712,000	—	—	—	—	104	—	320	1·3	Blood picture normal.	Animal in good health.
15	6,312,000	—	708,000	—	—	—	—	104	—	300	1·2	—	Small infiltrate at site of inoculation.
16	5,324,000	—	304,000	—	—	—	—	98	—	320	1·4	Hæmagglutination; some irregularity in size of red cells.	Animal ill; infiltrate softening; one or two skin hæmorrhages seen.
17	5,104,000	—	240,000	—	—	—	—	98	—	300	1·5	Some polychromatophilia; no nucleated red cells seen.	—
18	5,248,000	—	608,000	—	—	—	—	96	—	320	1·4	Killed for examination.	

Guinea-pig B 4.

June													
8*	7,280,000	18,600	752,000	75·7	2·6	21 0	0·4	92	98·8°	400	1·0	—	—
9	7,808,000	15,800	752,000	71·6	1·5	25·9	0·8	92	99·6°	360	0·98	—	Well marked firm infiltrate over abdomen.
10	4,704,000	18,200	182,000	66·2	1 2	28·2	—	80	100·0°	330	1·3	Hæmagglutination commencing; some poikilocytosis.	Animal ill; numerous skin hæmorrhages.
11	3,952,000	14,800	190,000	56 0	1·5	42·0	—	66	100·0°	365	1·3	A few microcytes and megalocytes.	Animal very ill; infiltrate softening.
12	2,896,000	8,800	122,000	35·0	3 0	62·0	—	40	101·2°	330	1 1	Hæmagglutination marked; polychromatophilia; many nucleated red cells, 3%.	Condition unchanged.
13	1,232,000	18,800	144,000	29·0	2·0	68·0	1·0	30	99·8°	390	1·8	Normoblasts and megaloblasts very numerous, 8%.	,, ,,
14	1,296,000	8,400	248,000	36·0	2·3	61·0	0·6	30	98·4°	310	1 8	Some punctate basophilia noted; phagocytosis of red cells by large mononuclears.	,, ,,
15	?	8,600	288,000	34·8	1·3	61·1	2·3	24	96 0°	290	—	Nucleated red cells, 3%.	,, ,,
16	1,952,000	15,200	248,000	50·2	—	47·7	1·7	32	94·0°	250	1·4	,, ,, 2·5%.	Animal cold and collapsed; died during night.

Guinea-pig B 5.

June													
8*	5,840,000	12,800	340,000	78·2	0·4	20·3	—	94	98·6°	420	1	—	—
9	7,728,000	17,800	1,064,000	80·0	—	20·0	—	90	99·8°	385	0·74	—	Fairly well marked infiltrate over abdomen.
10	7,312,000	11,600	284,000	75·6	—	23·0	1·0	80	99·0°	380	0·61	Agglutination of red cells commencing. A few microcytes and poikilocytes.	Animal ill; no skin hæmorrhages seen.
11	2,980,000	9,400	298,000	58·0	4·0	35 0	0·5	66	99·0°	375	1·3	Hæmagglutination well marked; numerous polychromatophilic megalocytes.	Infiltrate softening; a few skin hæmorrhages to be made out.
12	1,200,000	10,800	330,000	61·0	6·0	32·0	1·0	—	94·0°	350	1·3	Fair number of normoblasts and megaloblasts, 3%.	Animal *in extremis*, cold and collapsed; died between 9 and 10 P.M.

* Subcutaneous injection of 1·5 c.c. anti-guinea-pig platelet serum. † Received second dose of 2 c.c.

polychromatophilia, very numerous; poikilocytes; no punctate basophilia. A few normoblasts, some showing pyknosis and karyorrhexis of nucleus. A few red cells with "Jolly" bodies. Pig cold and collapsed; blood thin and watery; no eye changes observed. Post mortem: Gelatinous blood-stained infiltrate over abdomen and thorax. A fair number of small punctiform hæmorrhages in skin. Numerous hæmorrhages in subcutaneous tissue. No eye changes. Spleen dark red and friable. Bladder filled with dark, blood-stained urine. Testicles showed several large hæmorrhages. No hæmorrhages in stomach or intestines. Lymph glands of red hæmolymph character. Bone marrow dark red.

TABLE II.B.—*Guinea-pig 9.*

Date.	Red cells.	Plates.	Hb.	Weight.
June 30th*	6,620,000	672,000	98%	260 gm.
July 1st	5,952,000	480,000	96%	260 ,,
,, 2nd	5,616,000	272,000	84%	240 ,,
,, 3rd	720,000	392,000	16%	230 ,,

Death between 1 and 2 P.M. on July 3rd.

* At 5 P.M. received 1 c.c. anti-plate serum subcutaneously.

Notes on blood picture and general condition.—July 1st: Pig lively. Well-marked firm infiltrate over abdomen and extending forward to thorax. Blood picture normal except for one or two red cells showing polychromatophilia. July 2nd: Hæmagglutination well marked. Some red-cell shadows. Irregularity in size of red cells commencing. Megalocytes of medium size showing polychromatophilia, but not numerous. Animal ill. Infiltrate softening; some skin hæmorrhages; gums of good colour. July 3rd: Hæmagglutination extreme. Blood very watery; oozing after vein puncture. Irregularity in size of red cells. Megalocytes showing polychromatophilia; a few deeply basophile red cells; some poikilocytes. A few normoblasts, some showing punctate basophilia of cytoplasm. Pig collapsed and cold. No eye changes visible. Post mortem: A few small punctiform hæmorrhages in skin. Glands do not show hæmolymph change. No eye changes. Bladder contained dark blood-stained urine. No hæmorrhages in internal organs.

TABLE II.C.—*Guinea-pig 10.*

Date.	Red cells.	Plates.	Hb.	Weight.
June 30th*	6,630,000	688,000	102%	360 gm.
July 1st	6,170,000	384,000	100%	320 ,,
,, 2nd	5,504,000	328,000	84%	300 ,,

Death during night of July 2nd–3rd.

* At 5 P.M. received 1 c.c. anti-plate serum subcutaneously.

Notes on blood picture and general condition.—July 1st: Blood picture normal. Hæmagglutination well marked. Pig lively. Infiltrate not very well marked. July 2nd: Irregularity in size of red cells. Fair number of megalocytes, mostly showing polychromatophilia. Some red-cell shadows. Pig not well. Infiltrate more marked, but softer. Some skin hæmorrhages, one about the size of a threepenny-piece. Post mortem: Well-marked gelatinous blood-stained infiltrate. Numerous small punctiform hæmorrhages in skin. Glands of hæmolymph character. A few small hæmorrhages in lungs and in wall of left ventricle. Spleen much enlarged and friable. One or two minute petechiæ in pancreas. Bladder full of blood-stained urine. Numerous hæmorrhages in wall of large gut and in testicles.

Remarks on Tables II.A, II.B, *and* II.C.—These three animals, whose initial weights were 240 gm., 260 gm., and 360 gm., did not survive beyond the third day. All showed pronounced purpura. The effect of the serum on the blood elements is essentially similar to that obtained in the case of the larger animals of Table I. Notes regarding the minute changes in the red cells, the general condition of the animals during life, and the post-mortem appearances are appended to the tables.

Control Experiments with other Sera: Action of Anti-leucocytic Serum.

This serum was prepared by immunising rabbits with leucocytes obtained from the peritoneal exudates of guinea-pigs which were killed 4 hours after an intraperitoneal inoculation of 5–10 c.c. of sterile broth. Such exudates, as is well known, consist almost entirely of polymorphonuclear leucocytes, and if great care is taken in manipulation of the animals after death the risk of admixture with red cells can be very largely avoided. The exudates are taken up in citrated saline and thereafter washed in normal saline. The serum of the rabbits so immunised proved to be quite as fatal to guinea-pigs as the anti-plate serum, but did not produce purpuric phenomena. We append two tables (Nos. III.A and III.B) showing the action of the serum on the blood elements throughout the course of the experimentally induced disease.

TABLE III.A.—*Guinea-pig 15.*

Date.	Red cells.	Plates.	Leuco-cytes.	Differential count.†				Hb.	Weight.
				P.	E.	L.	Ma		
									Gm.
July 8th*	6,128,000	592,000	10,200	40·5%	0·5%	58·5%	0·5%	100%	290
,, 9th	4,440,000	456,000	2,900	3 0%	0 5%	96 0%	0·5%	80%	250
,, 10th	2,080,000	640,000	10,300	10·0%	1·0%	88·0%	1·0%	40%	230
,, 11th	?	?	?	25·0%	2·0%	72·5%	1·5%	?	220

Death at 3 P.M. on July 11th.

* At 5 30 P.M. received 1 c.c. anti-leucocyte serum subcutaneously.

† P = Polymorphonuclears. E = Eosinophiles. L = Lymphocytes. Ma = Mast cells.

Blood picture and general condition.—July 9th: Red cells irregular in size; numerous polychromatophilic megalocytes; a few red cells showing "Jolly" bodies; no nucleated red cells. The polymorphonuclear leucocytes are degenerated, their protoplasm being vacuolated and the granules appearing as indistinct basophile knots in cytoplasm. Pig ill. Small infiltrate under skin; no skin hæmorrhages. July 10th: Large numbers of megalocytes; some microcytes; well-marked polychromatophilia; nucleated red cells (normoblasts) 1·5 per cent. of white cells. Some phagocytosis of red cells by mononuclears. General condition unchanged. No skin hæmorrhages. July 11th: Some red cells show punctate basophilia; nucleated red cells (normoblasts and megaloblasts) 21 per cent. of white cells. Neutrophile myelocytes present. Pig ill and collapsed; hæmoglobinuria; no eye changes. Post mortem: No skin hæmorrhages. Lymph glands appear normal. No hæmorrhages in internal organs. Spleen greatly enlarged and friable. Bladder full of blood-stained urine.

TABLE III.B.—*Guinea-pig 16.*

Date.	Red cells.	Plates.	Leuco-cytes.	P.	L.	Ma.	Hb.	Weight.
								Gm.
July 8th*	6,368,000	584,000	14,400	51·0%	49·0%	—	98·0%	270
,, 9th	5,560,000	648,000	2,600	3·0%	97·0%	—	90·0%	240
,, 10th	2 680,000	640,000	8,000	6 6%	88·6%	3 3%	52·0%	220
,, 11th	1,608,000	776,000	13,200	34·0%	67 5%	0·5%	22 0%	200

Pig dead at 6 P.M. on July 12th.

* At 5.30 P.M. received 1 c.c. anti-leucocyte serum subcutaneously.

Blood picture and general condition.—July 9th: Slight hæmagglutination. Irregularity in size of red cells; poikilocytes; polychromatophilic megalocytes; one nucleated red cell seen. Degeneration of polymorphonuclears as in No. 15. Pig seems ill. Very slight infiltrate; no skin hæmorrhages. July 10th: Marked irregularity in size of red cells; no nucleated red cells. Infiltrate soft; no skin hæmorrhages. July 11th: Many megalocytes showing polychromatophilia; some red cells with punctate basophilia; nucleated red cells (normoblasts) 3·5 per cent. of white cells. Phagocytosis of red cells observed. Myelocytes 4 per cent. (total neutrophiles, 34 per cent.). Pig very ill. No eye changes. Post mortem: No skin hæmorrhages. No eye changes. No hæmorrhages in internal organs. Spleen slightly enlarged. Hæmoglobinuria. Liver yellowish.

It will be seen from the tables that while the red cells were very considerably affected, the blood plates were not appreciably altered in number. The most striking phenomenon in connexion with this serum is the great but temporary fall in the absolute number of leucocytes. In this fall, as the differential counts show, the polymorphonuclear cells are chiefly involved. No hæmorrhages were seen on the skin during life or in the organs after death. In both cases hæmoglobinuria was a well-marked feature.

Action of Anti-red-cell Serum (Ordinary Lytic Serum).

The effects of injecting lytic serum into the animal whose red cells have been used for immunisation have been studied by several workers, and notably by Muir and McNee (1912),[2] who have experimented with anti-rabbit red-cell serum prepared by immunisation of the goat with rabbit red cells. No record has been found of the production of purpuric lesions by such sera. It was, however, considered advisable to prepare a lytic serum for comparative tests, and for this purpose rabbits were immunised with washed guinea-pig red cells in the usual way. This serum has been tested on guinea-pigs only in a few cases so far. It is very lethal for guinea-pigs, but no evidence has been obtained that it can give rise to generalised purpura. As we shall see later, an anti-rat-red-cell serum proved to be equally devoid of purpura-producing effects when injected into rats, whereas the anti-rat-plate serum consistently produced purpura.

The Question of Dosage of Anti-plate Serum.

To test this point four guinea-pigs, each exactly 250 gm. weight, received the following quantities of anti-plate serum subcutaneously in the dorsal region on June 2nd, 1914: 2 c.c., 1 c.c., 0·5 c.c., and 0·1 c.c. (volume in all cases made up to 2 c.c. with saline). The animal which received 2 c.c. died on June 6th, showing an enormous number of hæmorrhages, with petechiæ on the heart and lungs and double cataract. The animal which received 1 c.c. died on June 4th (i.e., after 42 hours). There was beautiful miliary purpura over the whole skin, with petechiæ on the heart and lungs. Cataract had not developed. The animal which received 0·5 c.c. developed, like the others, a local swelling which had practically disappeared on June 6th. It died ten days later, but showed no purpuric lesions either internally or externally. Very probably any such lesions that may have occurred and escaped detection in the early days after inoculation had faded. The animal which received 0·1 c.c. showed only very slight local swelling for a few days after inoculation, and remained well.

Experimental Purpura in the Rabbit.

An anti-rabbit-plate serum was prepared by immunising the goat with rabbit blood plates recovered from rabbit blood by a method similar to that employed in the case of guinea-pig blood. Each dose given to the goat consisted of the blood plates recovered from the mixed blood of 12 rabbits. About nine such injections were given. The serum of the goat was tested at various times during the course of immunisation, and it will be convenient to detail briefly the results obtained with this serum on various rabbits, as in certain cases highly interesting pathological lesions were found at necropsy. In the earlier cases of the series purpuric lesions in the skin were unfortunately not searched for.

Rabbit 1.—Received on June 20th 4 c.c. anti-plate serum subcutaneously (from test bleeding of goat after three doses). June 21st: Considerable soft local swelling. June 23rd: Swelling very slight. Rabbit remained well till July 15th, when sudden death took place. Post mortem: Animal well nourished. Peritoneal cavity filled with clotted blood and extravasated fæces. *Two large fairly clean-cut perforations of the bowel just below cæcum. A few purpuric spots in small intestine. Some faded purpuric spot in skin, especially that of hind limbs. Large hæmorrhages in the psoas muscle and in the muscles over tibia and fibula. Effusions of blood in the periosteal sheaths of these bones. Stomach mucosa showed a cluster of minute hæmorrhages, but there was no general purpura of the organ.* Liver and lungs healthy.

Rabbit 2.—Received on June 20th 1·5 c.c. intravenously (test bleeding after four doses). Remained well.

Rabbit 3.—Received on June 30th 2 c.c. intravenously (test bleeding after four doses). Remained well till July 3rd, when it was given a further dose of 3 c.c. intravenously. Death occurred two hours thereafter. Post mortem: *Perforated ulcer of colon adherent by film of lymph to abdominal wall. Purpuric patches round the ulcer.* The colon contained another large ragged ulcer with greyish scurf on it. It was not perforated. *In the stomach were two similar large non-perforated ulcers.* Right lung collapsed and congested. Some free blood in right pleural cavity. The liver contained a few nodules of pseudotuberculosis, so that some doubt remains whether the late purpuric lesions met with may have been of bacterial origin. This is, however, unlikely.

Rabbit 4.—Small Russian. Received on July 6th 5 c.c. intraperitoneally (test bleeding after four doses). July 7th: Three or four purpuric spots in skin over sternum. July 8th: Very large number of purpuric spots on skin of abdomen and back, and especially of extremities. Petechiæ on ear. On the same day it received a further dose of 3 c.c. intraperitoneally. July 9th: Rabbit looks well. Received a third dose of 3 c.c. intravenously and died in convulsions five minutes afterwards. Post mortem: Enormous number of skin hæmorrhages. Miliary purpura of stomach. One or two petechiæ on epicardium, and a good number on large bowel and under kidney capsule. Very large number in skin covering fore and hind extremities and tail. No cataract. Large amount of free blood in peritoneal cavity. One or two reddish lymph glands in axilla and groin. Urine quite clear.

Rabbit 5.—Very small Russian weighing 440 gm. Received on August 27th 4 c.c. intraperitoneally (test bleeding after seven doses). August 28th: Animal looks fairly well. Numerous purpuric spots on skin of abdomen and extremities. Weight 431 gm. August 29th: Animal dead. Post mortem: Beautiful purpura of skin. *Extensive purpura of cæcum and large bowel.* A few spots in small intestine and in stomach. Numerous petechiæ in diaphragm.

Blood Changes in Experimental Purpura of the Rabbit.

We append three tables (Nos. IV. A, IV. B, and IV. C) in which are recorded the blood changes, &c., in the case of three rabbits inoculated intraperitoneally with the same dose (3 c.c.) of anti-rabbit-plate serum.

TABLE IV.A.—*Rabbit 33.*

Date.	Red cells.	Plates.	Leucocytes.	P.	E.	L.	Hb.	Coag. time.
July 15th*	5,792,000	648,000	12,200	28·0 %	2·0 %	70·0 %	80·0 %	1′ 47″
,, 16th	4,864,000	100,000	10,400	54·5 %	0·5 %	45·0 %	66·0 %	2′ 55″
,, 17th†	4,872,000	496,000	9,800	27·5 %	1·0 %	71·5 %	64·0 %	1′ 48″

* At 4 P.M. received 3 c.c. anti-rabbit-plate serum intraperitoneally.
† Killed with ether to obtain specimen of skin.

[2] Muir, R., and McNee: The Anæmia Produced by a Hæmolytic Serum, Journal of Pathology and Bacteriology, vol. xvi., p. 410.

Blood picture and general condition.—July 16th: Hæmagglutination present. Some irregularity in size of red cells; a few red cells showing polychromatophilia; one or two nucleated red cells seen. Rabbit quite lively. Bleeds very readily when ear vein is punctured; marked purpura over entire skin. July 17th: No nucleated red cells seen; a few showing polychromatophilia. Rabbit quite lively. No fresh outburst of purpura so far as can be detected. Post mortem: Extreme purpura of skin. Lymph glands not of frankly hæmolymph character. A few punctiform hæmorrhages in stomach and large gut. Some extensive hæmorrhages in muscles of thigh. No hæmoglobinuria.

TABLE IV.B.—*Rabbit 34, weight 920 gm.*

Date.	Red cells.	Plates.	Leucocytes.	P.	E.	L.	Ma.	Hb.	Coag. time
July20th*	5,424,000	672,000	12,400	15·0 %	0·5 %	83·5 %	1·0 %	80 %	0' 58"
,, 21st	5,016,000	106,000	14,400	22·0 %	—	77·5 %	0·5 %	70 %	2' 0"
,, 22nd	3,824,000	232,000	12,100	30·5 %	—	68·5 %	1·0 %	50 %	1' 5"
,, 23rd	3,960,000	454,000	7,800	25·0 %	0·5 %	74·5 %	—	56 %	—
,, 24th	4,344,000	752,000	8,400	—	—	—	—	58 %	—
,, 25th	4,184,000	760,000	18,000	—	—	—	—	58 %	—
,, 29th	4,416:000	800,000	10,000	—	—	—	—	70 %	—

* At 4.15 P.M. received 3 c.c. anti-rabbit-plate serum intraperitoneally.

Blood picture and general condition.—July 20th: Before injection one or two nucleated red cells were seen in film. July 21st: Little change in red cells; one normoblast seen. Animal drowsy and unwell. Hæmorrhages in skin, and specially marked in skin of ears. The flicking or rubbing of the ears produces an immediate crop of small punctiform hæmorrhages. July 22nd: Many red cells showing polychromatophilia; marked irregularity in size of red cells; no nucleated red cells seen. Rabbit quite lively. Hæmorrhages still present in skin. July 23rd: Marked irregularity in size of red cells; some large megalocytes showing polychromatophilia; no nucleated red cells seen. Animal's condition good. July 29th: Animal's condition good. Purpuric spots in skin mostly faded. A few still present on ears.

TABLE IV.C.—*Rabbit 35, weight 700 gm.*

Date.	Red cells.	Plates.	Leucocytes.	P.	E.	L.	Ma.	Hb.	Coag. time.
July20th*	4,240,000	640,000	9,600	25·5%	0·5%	72·5%	1·5%	62%	1' 2"
,, 21st	3,696,000	98,000	16,400	52·5%	—	47·0%	0·5%	50%	30"
,, 22nd	3,840,000	368,000	9,000	22·0%	2·0%	76·0%	—	44%	—
,, 23rd	3,856,000	472,000	6,600	50·0%	0·5%	49·5%	—	48%	—

Killed with ether at 2 P.M. on July 23rd.

* At 4.45 P.M. received 3 c.c. anti-rabbit-plate serum intraperitoneally.

Blood picture and general condition.—July 20th: Before injection no nucleated red cells were seen. July 21st: Hæmagglutination present but not marked. Some irregularity in size of red cells; some poikilocytes; no nucleated red cells. Animal ill. Hæmorrhages in skin, and especially in skin of ears. July 22nd: No nucleated red cells. Animal's condition unchanged. July 23rd: No nucleated red cells. Condition unchanged. Post mortem: Skin shows numerous hæmorrhages. Lymph glands appear normal. Numerous intramuscular hæmorrhages in diaphragm. No hæmorrhages in stomach or intestine; no hæmoglobinuria. Some hæmorrhages of moderate size in thigh muscles.

It will be seen that all three animals developed marked generalised purpura from which they recovered. They were, however, killed for examination purposes at various dates, and the post-mortem appearances are appended to the tables. The marked and early fall in the plate content corresponding with the early onset of purpuric skin phenomena will be noted. In these rabbits coagulation times were taken by the Dale-Laidlaw method,[3] the blood being drawn into short capillary tubes, each containing a small shot. The data so obtained are included, but we are not satisfied that they can be depended upon, in view of the variations we have obtained by this method in normal rabbits examined at short intervals. This question is reserved for further investigation.

[3] Dale, H. H., and Laidlaw, P. P.: A Simple Coagulometer, Journal of Pathology and Bacteriology, vol. xvi., p. 351.

Experimental Purpura in the Rat.

Rabbits were immunised with rat platelets recovered from fairly large quantities of rat blood. Each immunising dose consisted of the plates obtained from the mixed blood of 24 sewer rats. Three rabbits were immunised, two of which died during the course of immunisation. From the remaining rabbit a small test bleeding was taken a few days after it received its second dose. The serum so obtained was tested on a rat and found to be efficacious in producing purpura (see below). The rabbit received a third and a fourth dose of rat plates, but unfortunately a few minutes after the intravenous injection of the latter dose it developed marked anaphylactic symptoms. It was felt that the serum of such an animal would probably be largely deprived of its anti-plate elements owing to absorption by the large dose of fresh plates injected. The animal was, however, bled when moribund and the serum so obtained filtered. As we shall see, this serum possessed marked purpura-producing property.

Effect of Injecting Anti-rat-plate Serum into Rats.

Rat 1.—Received on Sept. 29th 2·5 c.c. subcutaneously in dorsal region near root of tail (from test bleeding after second dose). Sept. 30th: Numerous minute skin hæmorrhages round the area of inoculation and along the tail. None elsewhere. Oct. 1st: The animal now moribund was killed with ether. Post mortem: A large oval skin hæmorrhage was found at site of inoculation, with smaller petechiæ at the periphery. Numerous hæmorrhages in skin of tail. *A few in pyloric portion of stomach.* No generalised skin purpura. The result, however, showed that the serum from this early test bleeding possessed the purpura-producing property.

Rat 2.—Received on Oct. 13th, 1914, 3 c.c. subcutaneously (from moribund rabbit after its fourth dose). Oct. 14th: A few petechiæ noted on skin of hind limbs. Oct. 15th: Animal not examined. Oct. 16th: Animal very ill and drowsy; was accordingly killed with ether. Post mortem: Beautiful generalised skin purpura. Large hæmorrhage in muscles of one fore limb; marked purpura of tail. *Several small hæmorrhages in pyloric portion of stomach.* Lymph glands bright red in colour. No hæmoglobinuria. No cataract.

Rat 3.—Received on Oct. 14th 4 c.c. subcutaneously. Oct. 15th: Cluster of small hæmorrhages near site of inoculation. Oct. 16th: More hæmorrhages in the neighbourhood. Animal very ill and drowsy. Oct. 17th: Rat dead. Post mortem: Generalised skin purpura. Red lymph glands throughout. *Petechiæ in pyloric portion of stomach and throughout a considerable part of the small intestine, also in sigmoid and rectum.* Urine in bladder blood-stained.

On the whole, the lesions in rat purpura are essentially similar to those met with in experimental guinea-pig purpura except that cataract, so frequently found in guinea-pigs dying of the experimental disease, has not so far been noted in rats. As mentioned above, the effect of anti-rat red-cell serum was investigated on rats. No purpuric lesions resulted.

Action of Heterologous Anti-plate Sera.

The question of the specificity of these anti-plate sera is of importance, and at various times control experiments in settlement of this point have been made. Invariably the result has been that the animal does not respond to the heterologous anti-plate serum—e.g., only slight inconvenience and certainly no purpura follow the

injection of the guinea-pig with anti-rabbit-plate serum, and *vice versâ*. Recently, being in possession of a supply of anti-guinea-pig-plate, anti-rabbit-plate, and anti-rat-plate sera, one of us has carried out the following experiment, which shows clearly that a heterologous anti-plate serum has no purpura-producing property.

TABLE V.

Rat A, 150 gm., received 7/12/1914, 3 c.c. anti-rat-plate serum.
" B, 90 " " " 3 " anti-guinea-pig-plate serum.
" C, 140 " " " 4 " anti-rabbit-plate serum.
(All inoculated subcutaneously.)

Guinea-pig A, 230 gm., received 7/12/1914, 3 c.c. anti-guinea-pig-plate serum.
" B, 230 " " " 3 " anti-rat-plate serum.
" C, 230 " " " 4 " anti-rabbit-plate serum.
(All inoculated subcutaneously.)

Rabbit A, 400 gm., received 7/12/1914, 4 c.c. anti-rabbit-plate serum.
" B, 380 " " " 4 " anti-guinea-pig-plate serum.
" C, 380 " " " 4 " anti-rat-plate serum.
All inoculated intraperitoneally.)

On Dec. 8th Rat A showed several purpuric spots near tail and also on legs. Other two rats showed nothing and appeared quite lively. Guinea-pig A had an extensive hæmorrhagic infiltrate over the whole of the abdomen and did not appear well. The other two animals showed no purpura and were quite lively. Rabbit A had numerous purpuric spots all over its skin and was obviously ill. The other rabbits were quite lively and showed no purpura. On Dec. 9th the animals inoculated with the homologous sera were still more drowsy and listless. Other animals appeared quite well. On Dec. 10th Guinea-pig A and Rabbit A dead.

Post mortem: Guinea-pig A showed beautiful skin purpura, extensive œdematous and hæmorrhagic infiltrate spreading over abdomen from seat of injection and extending deeply into the thigh muscles, and miliary purpura of stomach. There was no cataract, and the urine was quite clear. Rabbit A showed a large œdematous and hæmorrhagic subcutaneous area over upper thorax, neck, and fore limbs, also a larger hæmorrhage under skin of left cheek. Miliary purpura of stomach and slight purpura of intestine. Liver yellow and mottled. No cataract. Urine quite clear.

The other animals remained well and put on weight.

Dec. 11th: Rat A dead. Post mortem: Purpura of skin particularly marked over skull and cheek. A few spots in pyloric portion of stomach and a few in small intestine. Urine was blood-stained (hæmoglobinuria).

The other animals, which received the heterologous plate sera, remained well and put on weight.

Summary and Conclusions.

1. Data have been recorded on the blood changes in guinea-pigs after inoculation with anti-guinea-pig-plate serum. The early fall in the number of platelets simultaneously with the outburst of skin purpura is found to be a marked feature.

2. Purpura has also been produced in rabbits and rats by inoculation with the respective anti-plate serum. The blood changes in rabbits have been followed with results similar to those obtained in guinea-pigs.

3. Anti-plate serum, in addition to its purpura-producing properties, possesses in common with other cytolytic sera considerable lytic powers, which in all probability contribute largely towards the fatal issue in small animals. Death, however, may occur as the result of extensive hæmorrhages alone without any obvious lytic changes as evidenced by hæmoglobinuria.

4. Sera obtained by immunisation with red cells or leucocytes do not produce purpura.

5. Purpura is not produced by inoculating animals with heterologous anti-plate sera.

The histology of the purpuric lesions will form the subject of a later communication.

A CONTRIBUTION TO THE STUDY OF SHELL SHOCK.

BEING AN ACCOUNT OF THREE CASES OF LOSS OF MEMORY, VISION, SMELL, AND TASTE, ADMITTED INTO THE DUCHESS OF WESTMINSTER'S WAR HOSPITAL, LE TOUQUET.

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THE remarkably close similarity of the three cases which are described in this paper is shown in the following synopsis:—

—	Case 1.	Case 2.	Case 3.
Cause... ...	Shells bursting about him when hooked by barbed wire.	Shell blowing trench in.	Shell blew him off a wall.
	Preceding period of sleeplessness.	As in Case 1.	?
Vision ...	Amblyopia. Reduced visual fields.	"	As in Case 1.
Hearing ...	Slightly affected for a brief time.	Not affected.	As in Case 2.
Smell	Reduced acuity.	Total anosmia.	Unilateral anosmia and parosmia.
Taste	Almost absent.	Reduced acuity.	As in Case 2.
Other sensations ...	Not affected.	As in Case 1.	As in Case 1.
Volitional movements	"	"	"
Defæcation	Bowels not opened for five days following shock.	"	"
Micturition	Urine not passed for 48 hours.	Not affected.	As in Case 2.
Memory ...	Apparently slightly affected.	Very distinct amnesia.	"
Result of treatment	Gradual improvement by rest and suggestion.	As in Case 1, supplemented by hypnosis	As in Case 1.

CASE 1.—Private, aged 20. Admitted on Nov. 5th, 1914. On the nights of Oct. 28th and 29th he slept in the booking hall of X station; "not much sleep there." On the 30th he motored in a 'bus from X to Y, arriving there at 7.30 P.M.; billets found at 8 P.M.; on guard from 10–11.30 P.M., and from 1.45–3.45 A.M. At 11 A.M. on the 31st for the first time he went to the firing line. His platoon advanced to one set of trenches and then crossed the road to another, only to find it filled with cavalry and to be told that there was no room for them. During the retirement from this trench, at 1.30 P.M., they were "found" by the German artillery. Up to that time he had not been feeling afraid; he had "rather been enjoying it," and was in the best of spirits until the shells burst about him.

He was now retiring over open ground, kneeling on both knees and trying to creep under wire entanglements, when two or three shells burst near him. As he was struggling to disentangle himself from the wire three more shells burst behind and one in front of him. (An eye-witness in this hospital says that his escape was a sheer miracle.) After the shells had burst he succeeded in getting back under the wire entanglements; all his comrades had retired already. He managed to get into a trench, and as the firing slackened he rejoined his company. Immediately after the shell had burst in front of him his sight became blurred. It hurt him to open his eyes, and they "burned" when closed. The right eye seemed to have "caught it" more than the left. At the same moment he was seized with shivering, and cold sweat broke out especially round the loins. He thinks the shell behind him gave him the greater shock—"like a punch on the head, without any pain after it." The shell in front cut his haversack clean away and bruised his side, and apparently it burned his little finger. It was this shell, he says, which "caused his blindness."

Falling in with two comrades, he was led by them, one on either side, to the dressing station. He opened his eyes occasionally to see where he was going, but everything

appeared blurred except at the first moment of opening. There was no doubling of objects; they seemed to "dissolve." He was crying the whole time and worrying as to whether he was going blind. He kept turning over in his mind the succession of events from the beginning of the advance to the bursting of the shells. At the dressing station he was still crying and shivering; he was taken thence to a hospital by horse ambulance, where he was given brandy, and then sent on by horse ambulance to another hospital, and thence by motor ambulance at night to X, where he arrived early on Nov. 1st. He thinks he must have slept on the ambulances, as he *remembers nothing*.

From Nov. 1st to 4th at X; his eyes were bandaged and drops were instilled which "burnt terribly." No numbness or anæsthesia observed. *Slight deafness*, which soon passed off. On Nov. 1st he shivered in bed almost incessantly; his thoughts were still running on events between the advance and the bursting of the shells. No shivering after Nov. 3rd. He says he *did not micturate* from Oct. 30th P.M. until Nov. 2nd P.M., and *did not defæcate* from Oct. 30th until Nov. 5th (after aperient here). No involuntary passage of urine or fæces.

Past history.—He had been for two months in the Aisne district on the lines of communication, sleeping badly all that time owing to lumbar pains (and toothache during the first three weeks). He had failed to pass a medical examination some time previously because of renal trouble (abnormal amount of albumin in water) until after a long period of treatment. He had had lumbar pains a few nights before coming to France.

Present condition.—Nov. 6th.—A well-nourished man of nervous temperament, flushed complexion, and dark eyes. Movements normal; skin sensations normal. Eyes, fundi normal. *Fields distinctly contracted*, especially on temporal sides. Right eye—can read at normal distance, but "things have a slight haze round them." Left eye—the haze is much greater; is unable to see letters until they are quite near.

Nov. 7th.—Says he has lost his sense of taste and smell since the shells burst round him. Gets up now.

Nov. 9th.—Woke up last night and found himself crying, "not thinking of anything in particular"; he at once "pulled himself together."

Nov. 10th.—Tested for *taste* (tongue protruded) and *smell* in order mentioned:—

(1) Very strong sol. of sugar ...	Slightly sweet (only tasted after the tongue had been moved about).
(3) ,, ,, ,, salt ...	No taste.
(4) ,, ,, ,, acid ...	No taste, but "a peculiar feeling as if it dried the tongue."
(7) ,, ,, ,, quinine...	No taste (later, "a peculiar feeling of biting on the tongue").
(5) Carbolic acid (1 : 40)	No smell.
(6) Ether	Faint smell, like collodion.
(8) Peppermint (strong)	Faint smell of peppermint.
(2) Tincture of iodine	No smell.

Hypnosis tried; patient explains later—"I insisted on resisting." *Suggestions* offered during concentration. *Nov. 13th.*—Says his taste and smell are returning. Fields of vision still restricted, perhaps slightly less so. *Nov. 15th.*—He was transferred to England for further treatment.

On Nov. 16th the patient was admitted to the Middlesex Hospital, London, under the care of Mr. Arnold Lawson, who has kindly allowed me to append his note of the condition of the patient's eyes:—

Nov. 25th: R. E. $\frac{+1{\cdot}75}{+2{\cdot}25}$, L. E. $\frac{-1}{+2}$.

Visual acuity, each eye 6/36; when under correction 6/18. Just below and to the outer of the left disc is a small clear buff patch in the choroid. The upper inner margins of the discs are somewhat blurred and more densely white than elsewhere. These features are probably not pathological. The fields are definitely restricted, especially on the nasal side of the retina, being limited here to 40° in the right eye and to 70° in the left. No central scotoma. Taste and smell were found affected on admission, but these recovered earlier.

Nov. 27th.—General condition improved. Not so "nervy." Visual acuity under correction, R.E. 6/24, L.E. 6/18. The patient is now (Feb. 1st) attending the hospital as an out-patient.

CASE 2.—Corporal, aged 25. Admitted on Dec. 11th, 1914. The patient says that he was buried for 18 hours on Dec. 8th owing to a shell bursting and "blowing in" the trench in which he lay. Can remember nothing until he found himself in a dressing station at a barn lying on straw. He says that then he could not see and that for this reason he fell over something when he got up and walked about there. As to his past history, he came out to the war on August 13th, and was in the last two days' retreat at Mons and after at La Bassée. Has slept very badly since the start, often when billeted taking large doses of whisky to procure sleep. Has led a "fast" life and has had recent domestic worry.

Present condition.—Dec. 12th.—A healthy-looking man with flushed face and large dark eyes with wide pupils. His general manner does not inspire one with confidence in his reliability. Complains of pains in abdomen, back and limbs, and of difficulty in seeing. The pains are chiefly in the knees and ankles. His *sight has been very indistinct* since he was "buried." Says that if he looks at an electric light it takes him "five minutes" before he can see anything again. His vision has much improved since Dec. 8th, but he can only read when the type is close to his eyes and not for long; "it all becomes blurred." Heart, lungs, and joints appear normal. Abdomen distended and tender in lower part. *Bowels not opened for five days.* Aperient is effective. Vision: R.E. 5/60, L.E. 2/60. Media clear. Fundi natural.[1] Pupils and eye movements normal. Hearing normal.

Dec. 17th.—Smell: Fails to smell peppermint, ether, iodine tincture, and carbolic acid (1 : 40). *Taste* (tongue protruded): Very strong solution of sugar—tasted only after movements of tongue are allowed. Very strong solution of salt—"feels like petrol does on the hand," tasted only after movements of the tongue are allowed. Solution of acid—"salty, like alum."

Dec. 19th.—Complains that he does not sleep, but the sister in charge of his ward says that he sleeps well. *Treatment by suggestion* (during and without hypnosis) was begun, and continued daily until patient's transfer to England. On the second trial and afterwards a state of light hypnosis was easily induced. The deeper stages, involving hallucinations, anæsthesia, and post-hypnotic amnesia, could not be reached on any occasion. But the lighter stages (in which the patient responded to suggestions that he could not open his eyes, close his hand, stop laughing, and the like) sufficed to bring about assurance of a good night's sleep, gradual restoration of memory, and (later) improvement in visual and olfactory acuity, in near vision, in visual fields, and in colour sensibility. The improvement in visual acuity and near vision is shown in the following table:—

—	Visual acuity. Both eyes.	Near vision.	
		Right eye.	Left eye.
Dec. 15th.	Before hypnosis, 5/60.	No. 15 Jaeger (badly).	Less than No. 15 Jaeger.
,, 23rd.	After ,, 3/36.	No. 12 Jaeger	No. 15 Jaeger (badly).
,, 26th.	Before ,, 1/6.	No. 6 ,,	No. 12 Jaeger
	After ,, —	No. 4 ,,	No. 10 ,,
,, 27th.	,, ,, 2/6.	No. 2 ,,	No. 10 ,,
,, 28th.	No ,, 4/6.	No. 1 ,,	No. 4 ,,

[1] Colonel W. T. Lister, A.M.S., reports (Dec. 15th) that under homatropine and cocaine the refraction of the patient's eyes is as follows:

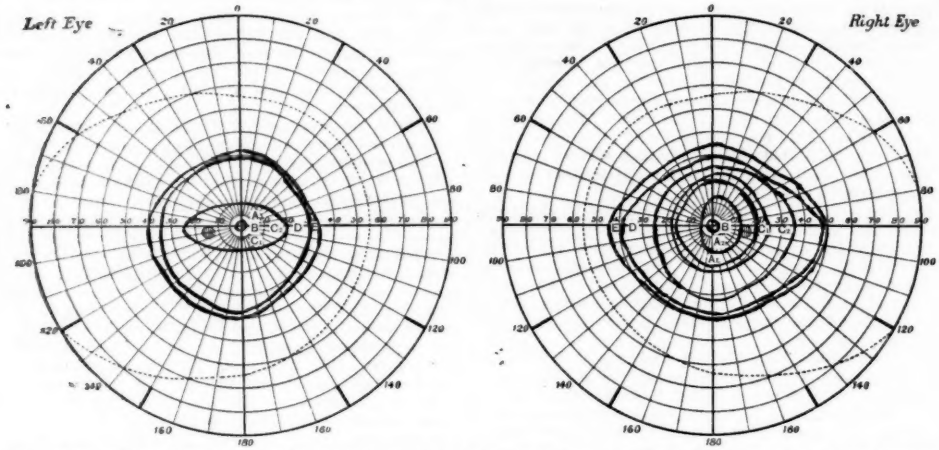
R.E. $\frac{+2{\cdot}5}{+2{\cdot}5}$ L.E. $\frac{-1?}{0 \text{ or } -0{\cdot}5}$

He makes at the same time the following note on the fundi: "Right eye: Sector below disc is deficient in retinal pigment, so that the choroidal vessels are abnormally visible, but there is no pathological pigmentation and there are no areas of atrophy. Left eye: Internal crescent; vessels drawn to nasal side; and lack of retinal pigment on nasal side (nasal staphyloma). The atrophic appearance is more marked in this eye; even the choroidal pigment is deficient, giving a pale area. Maculæ normal. Both discs are pale, and there is connective tissue by the sides of the vessels. The whole condition, in my opinion, might be congenital."

The improvement in visual fields is shown on the annexed Chart 1.[2] The "functional" character of this restriction of fields is shown by the fact that the patient was never observed to collide with objects when walking, and that he was able to box here when convalescent.

The improvement in *colour sensibility* was as follows:—Dec. 14th: Half-inch square of colour recognised at 22 cm. R.E., 7·5 cm. L.E. Dec. 27th: 350 cm. R.E., 50 cm. L.E. The sensibility of the eyes to red appeared to be keener than

CHART 1.



Perimeter charts from Case 2. A, Dec. 14th; A_1 at start, A_2 after testing other eye; B, Dec. 21st; C, Dec. 26th, C_1 before hypnosis, C_2 after hypnotic suggestion; D, Dec. 27th; E, Dec. 28th.

that to any other colour. Thus the red square was recognised at 100 cm. by the left eye on Dec. 27th, while other colours (yellow, blue, and green) could only be recognised at 50 cm. So, too, on Dec. 14th the visual field for the recognition of coloured squares was limited in both eyes to the fovea save in the case of red, the field for which in the right eye extended definitely, though slightly, beyond the fovea towards the nasal side of the retina.

The improvement in *olfactory acuity* is shown by the fact that on Dec. 27th he was able to smell and to recognise ether, peppermint, camphor, and turpentine, although still unable to smell carbolic acid (1:10), tincture of iodine, or methylated spirit.

The gradual restoration of *memory* occurred as follows:—*Dec. 22nd.—During hypnosis* suggestions made evoked a description of how the ground fell in on him at the trenches. He says that he was buried up to the neck and that Sergeant L. dug him out. Men of the N. Regiment (not of his own regiment) took him to their dressing station, but the medical officer there "packed him off" to the dressing station of the M. (his own) Regiment. He can now remember Captain S. (attached to his regiment from the ——) speaking to him and giving him a drink. He spoke to him when he reached the barn (the M.'s dressing station). While under hypnosis the patient is told that he will remember this when he awakes. He does so, but cannot explain why he had not been able to recall it before.

Dec. 23rd.—To-day, *before hypnosis*, he remembers another "big hospital" to which he was taken on leaving the barn—a "big square room with a stove in the centre"—opposite which he was placed. But he cannot recall how he got there, or how he left to come here by train. He cannot remember being carried on a stretcher until they took him out of the train at Étaples (the railway station for this hospital). He says that there was "no light" in the barn all the time he was there (24 hours). He remembers struggling in the trench "for hours" after he was buried. Finally he gave it up. "I went to sleep, and was enjoying myself at home when they started 'messing me about.' Someone fell on me and woke me up. I 'tumbled to things a bit' when they got me out. I got up and then fell down, and it was all a 'wash out.'"

Under hypnosis he confirms the above, adding that in his struggles in the trench he "said a prayer or two," and that when he fell asleep he thought himself in the R. Hotel at S., where he had lived for years and is well known. "I was listening to a young lady I know [not intimately] playing the piano. I saw Mr. S. [the landlord] and Mrs. S. The sleep and dreams kept coming and going. It was dark when they dug me out. After I got out a chap said 'the fellow's mad,' and I said 'You're a liar.' ..... Now, I remember a place between the barn and the hospital, rather a smart building, a long, low place. I was on a stretcher there. I must have got there by a horse ambulance, but I cannot remember this."

Dec. 26th.—Before hypnosis he recalls going to the clearing hospital (just mentioned) from the barn in a horse ambulance on a stretcher at midnight. He says: "I can remember talking to a major the next morning and having a sleeping draught at night. Then I went to another hospital at B. I had a ride in a motor ambulance on a stretcher, but whether this was from or to that hospital I cannot remember. I remember the journey in the train here distinctly. There were continual offers of tea, cocoa, sweets, and cigarettes. They wouldn't let us sleep for these things. I had a bad headache all the way down from the trenches. I did not bother much about my sight, as I thought it was imaginary. It wasn't until I got rid of the pain in my stomach which I came in with that I began to find my sight wouldn't let me read."

Dec. 27th.—While in hypnosis he gives the name of the man in the same trench with him as K. He "sees" very clearly the position of the trenches, their shallowness and covering. He remembers that he had been two days in the reserve trenches before he was sent on Dec. 7th to the firing line. He says, "The explosion lifted us up and dropped us again. It seemed as if the ground underneath had been taken away. I was lying on my side, resting on my hand, when the shell came. I got my right hand loose, but my left was fixed behind a piece of fallen timber. At last I dropped off to sleep and had funny dreams of things at home. One dream in particular I have thought over many times since. I haven't been able to make out why I should dream of the young lady playing the piano. I don't know her name and don't think I have seen her above twice."

Dec. 29th.—Before hypnosis he says that he can now "see" the N.'s dressing station—a one-storeyed house with two non-communicating rooms. He was taken first into the left-hand room, and later into the other in which the medical officer sat. No further information obtainable *under hypnosis*. He cannot recall how he got to the N. dressing station from the trenches.

[2] My thanks are due to Colonel Lister, A.M.S., who, by presenting the hospital with a portable perimeter and test types, made these observations now possible.

To recover the memory of this period other methods, in addition to hypnosis, were vainly tried. His dreams were generally of incidents belonging to earlier periods of the war, never of the trench-shelling. Attempts to obtain revival of the lost memories by getting him (*a*) to concentrate his attention on the scene of the shell bursting or of the N. dressing station, or (*b*) to record his thoughts when in a state of reverie, were fruitless.

How far the patient's memory, so far as it returned, can be trusted is not altogether certain. A man of the same regiment happened to be warded here at the time. He believes that the patient could not have remained in the trench for longer than an hour after the shell had burst. He declares that he saw him get out of the trench and report himself sick to Corporal R., and that he heard Corporal R. tell the patient to go off on foot to the M. dressing station. Until the day after the patient's arrival at the barn he never saw the patient again, when he was brought in himself there. He says that the doctors at the barn considered the patient "off his head." He does not believe that the N. Regiment was anywhere in the neighbourhood. He says that the man K. had been mortally hit some days before.

On further examination the patient says he has no recollection of reporting himself to Corporal R. or of meeting his fellow patient while at the barn, and he is quite certain that *somehow* he reached the N.'s dressing station before he got to his own.

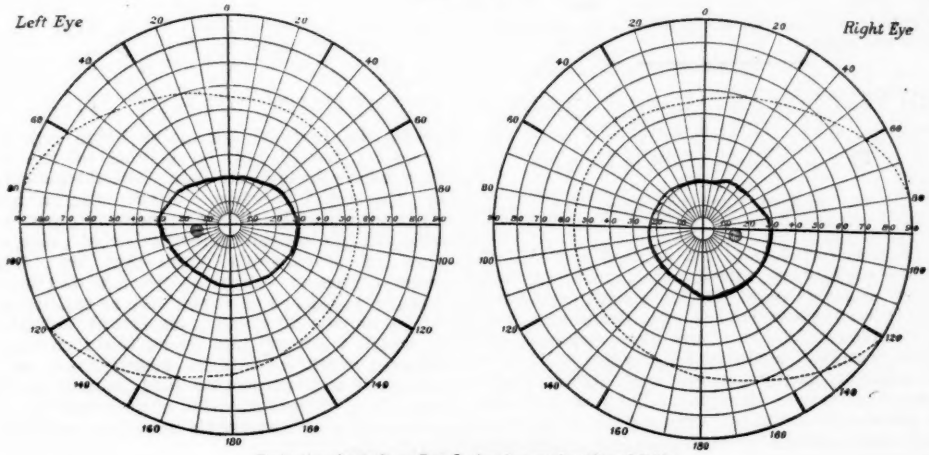
On the other hand, another fellow patient here happened to belong to the N. Regiment and was able to confirm the patient's account by stating that the trenches of the N. Regiment were on that day and was then brought, as he avers, to the dressing station by men of the N. Regiment. But of this last point the patient is not now so certain. He still insists that a man stepped into his fallen trench on top of him.

On Dec. 30th the patient was transferred to England for further treatment, and on the 31st he was admitted to the London Temperance Hospital under the care of Mr. J. S. Hosford, whence he has, I understand, now been discharged.

CASE 3.—Private, aged 23. Admitted on Jan. 26th, 1915. The patient says that he was blown off a heap of bricks 15 feet high owing to a shell bursting close to him. Thinks he must have fallen into a pool of water, as he next remembers finding himself, about 3 P.M. the same afternoon, in a cellar near a church with his clothes drenched. He does not know how he got there or how he left the cellar, but he remembers being in another hospital before he was admitted here. He cannot say if anyone was in the cellar with him. He remembers someone in the train talking to him and reminding him of being in the cellar.

Present condition.—Jan. 27th.—A healthy-looking man, well-nourished, but obviously in an extremely nervous condition. He complains that the slightest noise makes him start. His legs feel weak, and he has pain in the precordial region. His *sight has been very much impaired* since the shock. Distant vision, he says, is affected, and objects and type become blurred when long looked at. He has slept very little the last two nights. Heart, lungs, and joints appear normal. Abdomen, general spasm of muscles of wall on being touched. Hands tremulous. Knee-jerks normal, but the first attempts to evoke them provoked a spasm of the calf muscles and a few general convulsive movements as the patient lay in bed. His hands became very tremulous and his forehead sweated profusely. He appeared as if about to faint, and says that he felt cold and dizzy, and experienced "round and round movements of the stomach." The slightest touch on the

CHART 2.



Perimeter charts from Case 3, showing contraction of fields.

immediately next to those of the M. Regiment, and that the N. and M. dressing stations were situated in the same village, the former in a cottage about three-quarters of a mile beyond the latter, so that one would have to pass the M. dressing station on the way from the trenches to the N. dressing station.

There is hence a possibility that the patient wandered in a state of somnambulism from the trench past his own dressing station to that of the N.'s or that he wandered first into the N. trenches

legs provoked well-marked spasm of the quadriceps muscles of the same thigh. Plantar reflexes not obtainable. Extensor muscles of the toes appeared to be in a state of tonic contraction.

Jan. 30th.—Slept well last night for the first time. *Bowels not opened for five days* since the shock. Took an aperient last night and this morning; bowels open to-day. *Eyes:* Fundi normal. *Fields, distinctly contracted*, as in Chart 2. Near vision, either eye, No. 14 Jaeger; less for short words. Visual acuity (investigated by Colonel Lister, A.M.S.)—at first 6/24, but improved by encouragement and the indiscriminate use of weak + or − lenses to nearly 6/6.

Smell: Has complained until to-day of a *subjective sensation* of the odour of cordite. This has left him "since the bowels were open." *Left nostril fails to detect* smell of ether, peppermint, eucalyptus, ammonia, carbolic acid, or iodine tincture, all of which, save the last, are at once recognised when placed beneath the right nostril. No signs of nasal obstruction. *Taste: Only tastes very strong* solutions of sugar, salt, and acid, and then only when the tongue has been withdrawn and moved about the mouth; the taste is described as "*faint.*"

Feb. 1st.—He complains that he gets very excited when anyone addresses him. He still fails to remember how he got to the cellar, but he now remembers someone there asking him his name and regiment. He says: "When I got into the hospital before I came to this one I can now remember being put against a wall and then being taken into a small room to see the doctor, who gave me a ticket and told me I was suffering from concussion. I think I must have gone to sleep after this, as I don't remember anything else until I was in the train. There a Royal Army Medical Corps bearer brought me a German prisoner to talk to. He was in the Bavarian Guard and had just seen his first action.

[Patient is still under treatment.]

Comment on these cases seems superfluous. They appear to constitute a definite class among others arising from the effects of shell-shock. The shells in question appear to have burst with considerable noise, scattering much dust, but this was not attended by the production of odour. It is therefore difficult to understand why hearing should be (practically) unaffected, and the dissociated "complex" be confined to the senses of sight, smell, and taste (and to memory). The close relation of these cases to those of "hysteria" appears fairly certain.

I have to thank Captain W. P. S. Branson and Captain H. Pritchard, R.A.M.C., in whose wards these patients were placed, for permission to make these investigations, and Major Gordon Watson, R.A.M.C., Commandant, for permission to publish them.

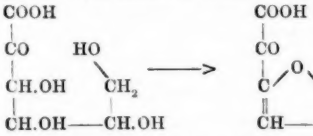
THE PSEUDO-LÆVULOSE OF DIABETIC AND OTHER URINES.

BY P. J. CAMMIDGE, M.D. LOND.,
AND
H. A. H. HOWARD, B.Sc.

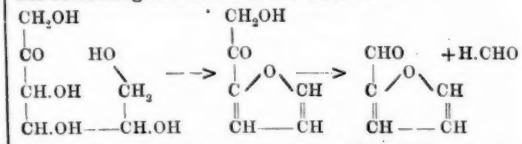
IN a previous paper[1] we pointed out that the lævulose usually met with in urine, unlike the lævorotatory sugar of plant origin, is precipitated from acid solutions by basic lead acetate, resembling in this respect glucuronic acid. This observation appears to have been first made by Külz, who published in 1890 a paper[2] giving the result of his analyses of the so-called urinary lævulose. Like plant lævulose, this substance reduces copper and bismuth in alkaline solutions, is lævorotatory, and is fermented with brewer's yeast. Külz also found that with phenylhydrazine it gave an osazone which in appearance, melting point (205° C.), and on analysis corresponded to dextrosazone. According to his analysis it has a formula nCH_2O. Unlike plant lævulose, however, it could not be obtained in a crystalline form, but was only secured as a syrup. The rate at which it reduced copper solutions, its rapidity of fermentation, and its specific rotatory power, but above all the ease with which it was precipitated by hydrates of the heavy metals, further suggested that urinary and plant lævulose were not identical substances. Other workers have since published similar results, but no attempt appears to have been made to establish the exact nature of the substance.

In diagnosing lævulosuria reliance has been placed upon a generally positive reaction with Seliwanow's test and the different readings obtained by reduction and the polarimeter. Borchardt, using a modification of Seliwanow's test, has claimed that lævulose does not occur in the urine, and that previous statements to the contrary were due to want of care in testing for it. In his modification the urine is treated with hydrochloric acid and resorcin, made alkaline with sodium carbonate, and then extracted with ethyl acetate. On carrying out this test with a solution of plant lævulose the ethyl acetate extract is coloured red, but with urines giving the ordinary Seliwanow reaction the watery solution retains the pigment and the extract is yellow.

These results obtained with Borchardt's test would be explained if, instead of lævulose, an acid with the constitution, $CH_2.OH\ (CH.OH)_3.\ CO.\ COOH$ were present. The reaction would then be—



—and this derivative being a ketonic acid would dissolve in the sodium carbonate solution and not be extracted by the subsequent treatment with ethyl acetate. If, however, lævulose were present the following reactions would occur:—



—and the furfuryl derivative being non-acid in character would not be soluble in the sodium carbonate solution, and hence would be extracted by the ethyl acetate. Since the unmodified Seliwanow and Pinow reactions are readily obtained in a considerable number of cases, and in view of Borchardt's claim that true lævulose never occurs in the urine when tested for by his method, it seemed to us that the so-called lævulose might be the hitherto undescribed ketonic acid, of which we have just given the formula. This formula would explain its resemblance to glucuronic acid with respect to lead acetate, and would also admit of the formation of an insoluble calcium salt and a characteristic methylphenylhydrazine derivative.

In order to investigate these points and to establish the identity of the substance specimens were prepared by the following procedure:—

The urine was concentrated to a fifth of its volume and a saturated solution of lead acetate added, using one-tenth of the original volume of urine taken. The mixture was then heated on a water bath at 90° C., cooled, filtered, and the precipitate washed with water. The precipitate was suspended in 100 c.c. of a saturated solution of sodium sulphate and digested for two hours, when it was diluted to 500 c.c., filtered, and the filtrate tested for lead. When all the lead was found to have been removed the filtrate was mixed with 50 c.c. of saturated calcium chloride solution and 50 c.c. of lime water. After standing for two hours the precipitate that had formed was filtered off, well washed

[1] THE LANCET, Sept. 26th, 1914, p. 791.
[2] Zeitschrift für Biologie, Band xxvii., p. 228, 1890.

with water, alcohol, and ether, and dried. The calcium content of the salt prepared in this way was determined in 6 cases with the following results: (i.) 9·4 per cent., (ii.) 9·5 per cent., (iii.) 9·2 per cent., (iv.) 9·3 per cent., (v.) 9·4 per cent., and (vi.) 9·6 per cent., an average of 9·4 per cent., which corresponds closely to the theoretical calcium content, 9·39 per cent., of a salt with the formula $(C_6H_9O_7)_2$ Ca.

To separate the free acid from the calcium salt it was suspended in water and a stream of carbon dioxide gas passed through for two hours. The calcium carbonate precipitate was then filtered off, and the filtrate concentrated by evaporation *in vacuo* over sulphuric acid. A thick, yellowish, hygroscopic syrup, from which no crystals separated, even after several months, was obtained. It had a sweetish acid taste, was lævorotatory, fermented with brewer's yeast, rapidly reduced alkaline solutions of copper and bismuth, and gave both Seliwanow's and Pinow's tests.

The phenylosazone and parabromphenylosazone were then prepared by the method of Maquenne, and the melting point determined on the "bloc Maquenne." The phenylosazone separated out as rather coarse yellow crystals arranged in sheaves. The purified product in all the cases examined had a melting point of 223° C., which is 7° lower than the melting point of dextrosazone and lævulosazone. The percentage of nitrogen in the osazone was determined in two cases by Dumas's method, giving in one instance 14·80 per cent. and in the other 14·99 per cent. These results suggest that the formula of the compound is probably—

$$CH_2.OH(CH.OH)_3.C{=}N.NH.C_6H_5$$
$$\quad\quad\quad

form, which is impossible with isoglucuronic acid. Moreover, the crystals were found to be soluble in absolute alcohol, but were insoluble in a saturated alcoholic solution of lævulose.

While therefore true lævulosuria, or fructosuria, may be met with it is apparently a rare condition, and in the majority of cases it seems probable that the term is a misnomer, and that the lævorotatory reducing substance that occurs in the urine is in reality the ketonic acid, isoglucuronic acid, we have described. This is differentiated from lævulose by Borchardt's test, by being precipitated from an acid solution by saturation with lead acetate, and the melting point of the parabromphenylosazone.

DEATH FROM STRANGULATED INTERNAL HÆMORRHOIDS.

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AND
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INTERNAL hæmorrhoids are an extremely common complaint, but although they give rise to a considerable amount of discomfort and inconvenience, and even disability, it must be very rarely that they are the direct cause of death. Cases of death from embolism following thrombosis of varicose veins in the leg are not uncommon, but a fatal issue from thrombosis of veins in the rectum is, in our experience, a very rare event. It is obvious that the danger of embolism resulting from thrombosis of the rectal veins is not so serious as when the veins of the leg are involved, for whereas the latter veins drain direct into the general circulation, and consequently the detached portion of clot can reach the heart, in the case of thrombosis of the rectum the embolus is more likely to be in the liver, where it would not have such serious consequences.

A case is recorded in THE LANCET of Sept. 23rd, 1911, by Dr. David A. Alexander of portal pyæmia following thrombosed internal piles. This patient had all the symptoms of portal pyæmia—rigors, ascites, œdema of the legs and abdomen, and a high temperature. The patient was very seriously ill for a period of six months, after which he appeared to recover, only to have a relapse three months later, from which, however, he again recovered. The only cause for the portal pyæmia that could be found was a limited tract of thrombosis in the hæmorrhoidal veins.

The following case, which was under our care at St. Mark's Hospital, is evidently of a similar nature, but unfortunately ended fatally. Although we think there was portal pyæmia in this case it was not so marked as in Dr. Alexander's case. The patient died apparently from septicæmia, the result of extensive gangrene of the rectum and neighbouring tissues, but had he survived longer we have very little doubt that the typical abscesses in the liver would have been evident. The only treatment which would appear to have given the patient any chance of recovery was an early colotomy, which would have enabled the bowel to be kept clear of fæcal material. It was, however, obviously unjustifiable to perform colotomy for thrombosed veins in the rectum, and by the time it was obvious that the whole of the rectum was gangrenous it was too late for this method to have had any chance of success, while the patient was certainly too ill to undergo any operation. The following are the notes of the case.

The patient, a man aged 43, was admitted to St. Mark's Hospital on Nov. 14th, 1914, for internal piles. He stated on admission that he had suffered from internal piles for about 25 years, and that of recent years the piles had prolapsed readily when he walked or on the least exertion, and that they had to be replaced. There had also been considerable bleeding at times. Within the last few years he had had "several attacks of piles," which had necessitated his remaining in bed for some days. The piles had evidently become strangulated during these "attacks," and he had been unable to replace them.

The patient was very much afraid of an operation, and he had put off coming to the hospital for a long time on this account. A severe attack of strangulation of the piles, which had occurred two days before his admission, had finally brought him to the hospital, and on admission he was suffering from strangulation of several large piles. He was very anæmic and seemed ill and in obvious pain. His skin was of a waxy colour; there was considerable puffiness beneath the eyes, and slight œdema of both feet. The lips and ends of the fingers showed a considerable degree of anæmia. There were a number of large varicose veins on the back of both thighs. The patient was very short of breath, apparently from anæmia. Examination of the chest showed slight œdema of both lungs. The heart was somewhat dilated and there was a well-marked hæmic bruit. His liver was slightly enlarged. Examination of the urine showed no albumin or sugar. Examination of the rectum showed a good deal of swelling round the anus and several large prolapsed hæmorrhoids, which were thrombosed and of a dark, bluish colour. Examination was very difficult as the parts were exceedingly tender. He was therefore examined under an anæsthetic, and it was then found that not only were the piles thrombosed, but that all the veins of the rectum appeared to be involved for some two inches up the bowel. The whole of the plexus of veins in the lower part of the rectum was thrombosed and swollen. It was quite impossible to do anything of an operative nature, or even to replace the piles.

The patient was sent back to bed and treated with hot fomentations, &c., to try to reduce the swelling. Instead of improving the condition became worse. Five days after admission there were signs of sloughing of the rectum, and an acute inflammatory swelling began to be evident behind the anus. This was incised, and a great deal of foul serum escaped. Two days later a swelling occurred on the left side of the anus and had to be incised. The whole of the rectum at this time was gangrenous for some four or five inches. The patient had lost all control; he was suffering from almost continuous diarrhœa and was very ill. The pulse-rate was 110, the temperature fluctuating between 99° and 101° F. He also began to complain of severe pain in the abdomen.

On the sixteenth day after admission a slough 1½ inches wide and 4½ inches long, which appeared to consist of all the coats of the rectum, came away. The whole of the buttocks and perineum at this time was œdematous and in a sloughing condition. Examination of the urine showed no albumin or pus. The patient was very seriously ill. During the third week the patient was very tender over the liver and complained frequently of abdominal pain. There were a number of large dilated veins on the abdominal wall and extensive œdema of the lower limbs. The temperature was still fluctuating, but there were no rigors. There was still severe diarrhœa in spite of all treatment. Two severe hæmorrhages occurred at the end of the third week, and the patient died two days later, apparently from septicæmia and general weakness.

Complete gangrene of all the coats of the rectum as the direct result of thrombosed internal piles seems to us a sufficiently rare condition to be worth recording. We are of the opinion that the condition was rendered possible by the secondary anæmia from which the patient was suffering.

A NOTE ON THE TREATMENT OF GUNSHOT WOUNDS OF THE FEMUR.

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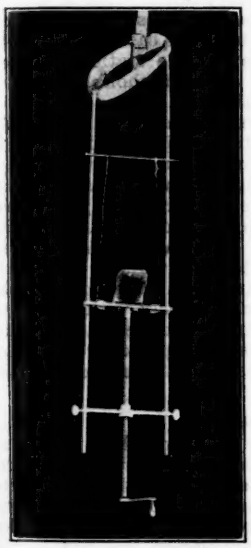
A LITTLE time ago Mr. B. C. Maybury and myself devised a modification of Thomas's knee splint with the idea of producing powerful extension of the leg during the process of plating fractures of the femur or tibia. When the Red Cross Hospital at Netley was opened the difficulty of adequately treating compound fractures of the femur was soon apparent. The chief difficulty was in maintaining extension and at the same time providing for efficient dressing and (possibly more important) the comfort of the patient. It was determined to try this modified Thomas's splint. The result more than came up to expectations, and cases which arrived with bad wounds and suffering great pain during the process of dressing were soon put at their ease and improved rapidly. In addition to this, some cases which were admitted six weeks after the injury with 3 inches of shortening were soon restored to their normal, or nearly normal, length, and union in a good position resulted.

A short description of the splint (Fig. 1) may be of service to those in charge of other hospitals. The splint as made consists of the original Thomas's crotch ring with a lateral diameter of 9½ inches. The two side pieces are made of mild steel, are parallel, and 8 inches apart. Sliding on these parallel side pieces are two transverse bars. The upper one is fitted with an ordinary footpiece. The lower one is perforated to accommodate a large machine-cut screw. The top of the screw runs in a collar in the transverse footpiece.

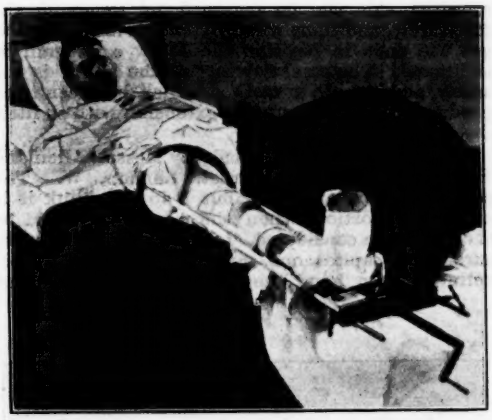
FIG. 1.



The splint unapplied. Shows the method of obtaining extension by means of a pin. Note the wire fastened by rings to the pin and passing over the pulleys in the transverse bar that carries the footpiece. The traction screw is longer than is now used.

The process of application is as follows. The ring is slipped over the foot and adjusted in the ordinary way, care being taken that the inner and back part of the ring gets a bearing on the tuber ischii. As the ring is rather large this is ensured by putting a pad on the outer side of the thigh. The foot is then fastened to the footpiece by a stirrup extension or a leather anklet, or by webbing embedded in plaster put on over wool wrapped round foot and ankle. The limb is supported in the splint by the two parallel bars in the same way that is usual in the Hodgen splint. The lower transverse sliding piece is then fixed to the two parallel bars by screws provided for the purpose, and extension applied to the limb by turning the traction screw. The end of the splint is either rested on sandbags or swung by a chain from a masthead or from the roof of the hut. (Fig. 2.) By this means the patient is free to move about in bed within reasonable limits, and the dressing of a posterior wound can be effected without discomfort to the patient by either raising the splint or turning him on one side, the constant steady pull of the screw preventing any undue shifting of the limb and consequent pain to the patient. If the limb tends to sag when the patient is turned on his side it can be prevented by loops of bandage fastened to the uppermost bar. (Fig. 4.)

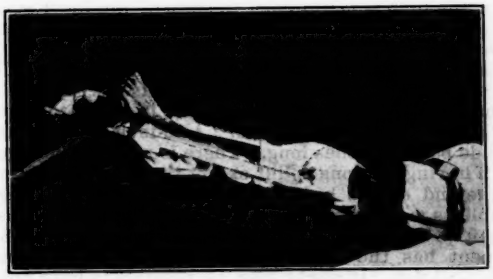
FIG. 2.



The splint applied to a fracture in the lower third of the femur. The splint is slung to the roof of the hut by a chain. Note the small pillow under the outer side of the ring. The man's face is expressive of his comfort.

In those cases in which it is impossible to apply the stirrup extension, either because of the state of the skin or from the presence of wounds in the leg, a pin can be driven through the lower end of the femur and the extension applied by a chain or thick picture wire, which runs from one end of the pin down to the transverse footpiece over two pulleys let into this, and up again to the opposite end of the pin. The use of the pulleys is to allow

FIG. 3.



The splint applied to a fracture in the middle of the femur. A pin has been driven through the bottom of the shaft of the bone and extension produced by a chain. The man's foot had been injured by a bullet, so that a strapping extension could not be applied.

the strain on either side of the limb to be equal, which it is difficult to ensure if the ends of the pin are fastened to the corresponding ends of the transverse footpiece. (Figs. 1 and 3.)

The distance between the parallel bars ensures the easy application of the dressing, and also enables an operation to be performed while the limb lies stretched in the splint. If relaxation is required this can be obtained by reversing the foot screw, and then when extension is required to get the ends in position the screw can again be tightened. The essential part of the splint is the screw, and no other method which has been tried produces a like amount of extension with so little discomfort to the patient.

This splint has been made by Messrs. Allen and Hanbury, of Wigmore-street, London, W. The cost is somewhat heavy, but I do not think it is out of proportion when the results obtained by the splint are considered. In addition, the expenditure is a capital one, and when a number of splints are in hand they can be passed from one

FIG. 4.

Shows the patient turned on his side for dressing a posterior wound (represented by a black piece of paper). Note the small cushion under the junction of the side bar and crotch ring. The limb is kept from sagging by means of loops of bandage passing round the limb and fastened to the upper side bar. They cannot be seen as they are hidden by the slings.

case to another, and even sent across the water to accommodate other people in their transit to this country. A man once in this splint can be moved with very little discomfort, and constant extension of the limb is maintained in spite of the inevitable movement from bed to stretcher which the wounded have to undertake in the process of removal to the base. If one type of splint is to be used for all cases, which can well be done, it is necessary to have the side bars 54 inches long in order to take the limb of a 75-inch man. A 66-inch man wants side bars 43 inches long. There is no disadvantage in having the long splint except that it sticks over the end of the bed. I am, however, having some splints made so that side bars of different lengths can be screwed into the crotch ring. This arrangement has the advantage that the splint can be packed flat. It would also be possible to have one traction-screw attachment for many splints if the transverse foot bar was provided with fastening thumb-screws.

A number of these splints have been provided by the British Red Cross Society and are now in use at this hospital.

The British Red Cross Hospital, Netley.

TYPHOID AND PARATYPHOID INFECTION IN RELATION TO ANTITYPHOID INOCULATION,

TOGETHER WITH REMARKS ON THE IMPORTANCE OF THE USE OF PROPHYLACTIC PARATYPHOID INOCULATION.[1]

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AT the present time when the prophylactic value of antityphoid inoculation has been fully recognised by the authorities, but is still vehemently opposed in certain quarters, it may prove not only of interest, but perhaps also of considerable value, to record briefly the results of observations made on patients in the Base Hospital at Oxford.

In the light of these observations we wish to emphasise, firstly, the extreme importance of classifying *all* cases returned as cases of "enteric" fever in accordance with the results of detailed bacteriological examination, particularly as regards the precise and careful differentiation between B. typhosus and B. paratyphosus. For if this be not done a large number of cases of paratyphoid fever are likely to be returned as cases of "enteric." The consequence will be that the statistics regarding the protective value of antityphoid inoculation will become seriously vitiated.

Secondly, we wish to urge again the importance of making prophylactic inoculations against certain other bacterial infections, some of which have already appeared during the war. And on the present occasion we refer particularly to paratyphoid infections, which seem to be occurring with considerable frequency, both in inoculated (antityphoid) and uninoculated individuals. The prophylactic paratyphoid inoculation suggested can readily be effected simultaneously with the antityphoid inoculation by using a mixed vaccine, and, so far as the evidence goes, this procedure does not lead to any notable increase in the severity of the reaction produced.

The Diagnosis.

The agglutination test is the quickest method of diagnosis. Blood cultures and cultures from the urine and fæces will usually enable the observer to isolate the micro-organism where opportunity exists for carrying out repeated examinations. But under war conditions the agglutination method is the one on which reliance must be placed. Accurate differential diagnosis, however, can only be obtained by *routine* testing of the serum of the patient against the three micro-organisms, B. typhosus and B. paratyphosus (A) and (B), in parallel series of observations, and by always determining the *maximum* dilution of the serum in which agglutination takes place. Individuals who have been inoculated with antityphoid vaccine within a period of some months or even years will give a high agglutination titre against

[1] The expenses of this work have been defrayed out of a grant received from the National Medical Research Committee.

B. typhosus. Whether they are suffering from active typhoid infection or not can only be determined by repeating the agglutination test at intervals in order to ascertain whether the titre of agglutination shows marked changes or remains practically constant. Such changes are in any case of greater importance in the diagnosis than is the absolute degree of agglutination. They can only be detected with certainty by making use of a standard culture of killed typhoid bacilli and employing the macroscopic method of determination, which is both simpler and more reliable than the microscopic.

A standard culture is readily prepared by the method previously described by one of us (G. D.).

The bacillus (B. typhosus, B. paratyphosus, &c.) is grown for 24 hours at 37° C. in large flasks in a peptone veal bouillon which has been sterilised in the autoclave at 115° C. for not more than 15 minutes. The culture must be made from a young bouillon culture of a typhoid bacillus which has been subcultivated daily in bouillon, preferably throughout several weeks. At the end of 24 hours the flasks are well shaken and 0·1 per cent. of commercial (40 per cent.) formalin is added. They are again shaken and placed in cold store at about 2° C. At intervals on the same day and on subsequent days for four or five days the flasks are again thoroughly shaken in the cold store. After three or four days they will always be found to be absolutely sterile. The bacterial suspension is subsequently diluted with sterile normal saline solution (containing 0·1 per cent. of formalin) to a standard opacity. Should it happen that the suspension is not entirely homogeneous it is filtered through sterile cotton wool and bottled for use in sterile vessels, either sealed or corked.

The standard culture has the following advantages: (1) It is sterile; (2) it is as sensitive to agglutination as the fresh culture, or even more so; (3) it keeps unchanged almost indefinitely if stored in a cool and dark place; and (4) it renders all observations strictly comparable. For the present purpose the agglutination test is made with the patient's serum against B. typhosus, B. paratyphosus (A), and B. paratyphosus (B) simultaneously in parallel experiments.

Method.—Place 15 small narrow sedimentation tubes in a stand in three rows of 5 each. With a proper dropping pipette measure out into a test-tube 54 drops of tap-water. Dry out the pipette and with it add 6 drops of the serum to be examined, giving a dilution of 1 in 10. Wash out the pipette carefully.

In tube 1 of each row place 0 drops of tap-water.
" 2 " 5 "
" 3 " 8 "
" 4 " 9 "
" 5 " 10 "

Dry the pipette and use it to add—

To tube 1 in each row 10 drops of the serum dilution (1/10).
" 2 " 5 " "
" 3 " 2 " "
" 4 " 1 " "
" 5 " 0 " "

Wash the pipette carefully, and then add to each tube in row 1 15 drops of standard B. typhosus suspension, to each tube in row 2 15 drops of standard B. paratyphosus (B), and to each tube in row 3 15 drops of standard B. paratyphosus (A). Shake each tube thoroughly in order from right to left (beginning with the weakest dilution). Place in the water bath at 55° C.

In tube 1 the serum acts in a dilution is 1 in 25.
" 2 " " " 1 in 50.
" 3 " " " 1 in 125.
" 4 " " " 1 in 250.

Tube 5 without serum is the control against spontaneous agglutination.

Higher dilutions are followed out in a similar manner, if the limit of agglutination is not reached within the first series. In inoculated persons who have not had typhoid (or paratyphoid) fever agglutination in a dilution of 1 in 25 justifies a strong suspicion of typhoid (or paratyphoid) infection. But in such a case the test must be repeated in the course of a day or two. Marked agglutination in a dilution of 1 in 50 or more is nearly always diagnostic of active typhoid (or paratyphoid) infection.

The reaction is completed in about two hours if the tubes containing the dilutions are maintained at a temperature of 55° C. in a water bath (50–55° C.) If left at the room temperature 24 hours must be allowed. Obviously the former procedure is to be preferred.

Inoculated persons may give a very high agglutinating titre, as may be seen in Table I. It is therefore necessary to explain briefly the character of the agglutination curve, and the manner in which the results of successive examinations of the serum are to be interpreted.

In the chart the main curve (broken line) shows the course of agglutination in an actual case of typhoid fever. It is indistinguishable in form from the curve obtained by an experimental inoculation with antityphoid vaccine, though its maximum is lower and its decline more rapid than is usual in the inoculated subject. In the same diagram are given observations on three different patients carried out by the method just described. They illustrate some of the chief points which we wish to bring out.

(α T) exhibits the high agglutination titre (1 in 1500) against B. typhosus of the serum of an individual inoculated in September, 1914. It shows no change in three successive observations in the course of six days. During the same period the paratyphoid (B) agglutination (α B) rises rapidly from 1 in 300 to 1 in 700. The agglutination of paratyphoid (A) (α A) is *nil*. Clearly the case is one of paratyphoid (B) infection at an early stage.

(β T) again shows the high and steady typhoid agglutination titre (1 in 1250) of an individual inoculated in August, 1914. Paratyphoid (B) agglutination (β B) during the same period undergoes a striking fall. Paratyphoid (A) agglutination (β A) is *nil*. Again a case of paratyphoid (B) infection.

(γ T) exhibits the steady but now lower typhoid agglutination titre (1 in 250) of an individual inoculated in India as long ago as 1908. His paratyphoid (A) (γ A) and (B) (γ B) agglutination are both *nil*. The patient had neither typhoid fever nor paratyphoid fever.

Apart from the cases of infection occurring in inoculated individuals in which both typhoid and paratyphoid bacilli are agglutinated, other cases occur in the *non-inoculated* where more than one micro-organism is agglutinated by the patient's serum. Here, also, it is necessary to determine the maximum dilution in which each organism is agglutinated, and to follow the agglutination curves in a series of successive observations.

The following statements will afford a sufficient guide in such cases. They are the result of extended general experience, and space does not allow us to present on this occasion the evidence upon which they are based.

1. That bacillus which exhibits the greatest agglutinability (highest agglutination titre) is the infective agent (or the principal infective agent) in the case under examination.

2. If the case is one in which the agglutination of a second micro-organism is due to the presence of *co-agglutinins* the curve of co-agglutination will be found to run parallel to the curve of principal agglutination, but at a lower level.

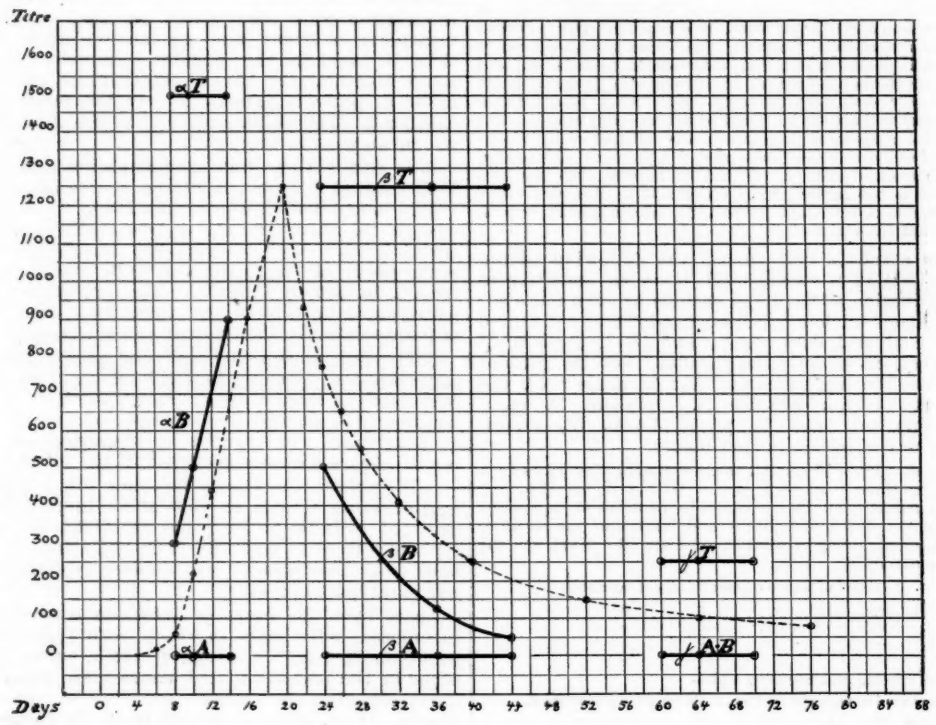
3. If the case is one of mixed infection with two different organisms their respective curves of agglutination are not parallel, but exhibit totally independent courses, which may even cross one another.

Results.

The results of observations carried out on patients in the Base Hospital at Oxford may now briefly be recapitulated. Table I. gives all necessary details.

Table I. contains all those cases out of the large number examined in course of ordinary routine which yielded positive results in agglutination tests. It will be seen that of these 20 cases suffering from continued fever 8 were diagnosed bacteriologically as typhoid fever and 6 as paratyphoid fever, while the remaining 6 were neither typhoid nor paratyphoid fever.

CHART SHOWING COURSE OF AGGLUTINATION.



Of the cases of paratyphoid fever one (Case 41), though not inoculated and denying that he had ever had typhoid fever, showed a steady typhoid agglutination of 1 in 1250. Up to the present it has not been possible to isolate the B. typhosus either from the urine or fæces of this patient. And we do not know yet whether he is a typhoid carrier or has recently passed through a mild unrecognised typhoid infection followed by infection with B. paratyphosus (B).

Cases 62 and 68 in the table are of special interest. Both individuals were inoculated against typhoid fever last autumn. Both have been in France, but never in any other foreign country so far as can be ascertained. In each case the serum strongly agglutinates both B. paratyphosus (B) and B. paratyphosus (A). The cases are either very striking examples of co-agglutination, or else, as is more probable, they constitute examples of mixed infection. From the fæces in each case paratyphoid bacilli (but no typhoid bacilli) have been isolated. In each case also two distinct types of paratyphoid bacilli are present. But whether these are merely variants of B. paratyphosus (B), or whether the one type is in reality B. paratyphosus (A), the other being certainly B. paratyphosus (B), has not yet been finally determined. The two individuals had never been in contact before the present illness.

The following are the points of chief importance from the table:—

1. *No case of typhoid* fever has been found among (antityphoid) inoculated individuals.

2. Of *six cases of paratyphoid* infection three occurred in (antityphoid) inoculated subjects. Had these cases been returned as cases of "enteric" fever the value of antityphoid inoculation as here exhibited would have been greatly diminished.

3. So far as this limited series of cases goes paratyphoid fever has occurred with *equal frequency* among (antityphoid) inoculated and non-inoculated individuals. This is in agreement with the finding of Kabeshima and others in long series of observations that *antityphoid inoculation affords no appreciable protection against paratyphoid infection.*

4. *In no case other than cases of active paratyphoid infection* has the serum of the patient agglutinated B. paratyphosus (B) or (A) in a dilution of 1 in 25, even when the titre of typhoid agglutination was very high. This statement holds good both for (antityphoid) inoculated individuals and for non-inoculated persons suffering from typhoid fever.

5. The typhoid agglutination found in *convalescents* from typhoid fever is easily distinguishable from that of inoculated individuals. First, it is (with very rare exceptions) of *low titre* as contrasted with that of persons recently inoculated, whose typhoid agglutination titre remains high

(see table). Secondly, it will always show a definite and measurable diminution of titre in the course of a week or two, while in (antityphoid) inoculated individuals whose titre has by lapse of time fallen to a similarly low level no measurable change will be found within the same period.

Prophylactic Paratyphoid Inoculation.

Paratyphoid vaccines have been studied by Castellani, Cummins and Cumming, Kabeshima and others. This is not the occasion on which to enter into any detailed discussion of their results. But the recent work of Kabeshima affords full evidence, both from animal experiment and from extended observations carried out on the personnel of the Imperial Japanese Navy, of the great protective value as well as the innocuous character of the paratyphoid inoculation. Kabeshima used a mixed vaccine containing equal numbers of typhoid, paratyphoid (A), and paratyphoid (B) bacilli. About 12,000 men have been inoculated with the mixed vaccine. The following table from Kabeshima shows the results recorded in five naval hospitals in Japan during the period 1909–1911 after the introduction of inoculation with the mixed vaccine:—

TABLE II.—*Kabeshima's Results.*

Disease.	Total numbers of cases.	Cases in inoculated subjects.		Cases in non-inoculated subjects.	
		Sick.	Dead.	Sick.	Dead.
Typhoid	367	68	5	299	40
Paratyphoid (A)...	289	71	2	218	5
Paratyphoid (B)...	447	0	0	447	0

In view of these results it is unnecessary to adduce further evidence of the fact that by the use of a suitable mixed vaccine adequate protection can be obtained against B. typhosus, B. paratyphosus (A), and B. paratyphosus (B).

As regards the reaction produced, Kabeshima states that when the vaccine used is made up of equal quantities of the three micro-organisms concerned, so that the total number of bacilli in the dose does not exceed the usual number present in a dose of antityphoid vaccine, the severity of the reaction (both local and general) is not significantly greater than that following ordinary antityphoid vaccination. Should the question arise as to whether it is better to employ a mixed vaccine of this character or to carry out immunisation against each separate micro-organism separately, it may be stated that the former method is preferable. Obviously it saves time, and it avoids the frequent repetition of periods of brief temporary disability. Moreover, there is ample evidence from observations of Jörgensen, Schroeder, Dreyer, and others that in successive immunisation with these micro-organisms the immunity evoked against those organisms which are injected later in the series is less than the immunity obtained when they are mixed together and injected simultaneously, unless a considerable interval is allowed to elapse between the inoculations. And this result is independent of the order in which the different micro-organisms are employed.

TABLE I.—*Results in Agglutination Tests.*

Case number.	Clinical diagnosis.	Typhoid agglutination.			Paratyphoid (B) agglutination.			Paratyphoid (A) agglutination.			Antityphoid inoculation.		Bacteriological diagnosis as regards typhoid and paratyphoid infection.
		First examination.	Second examination.	Third examination.	First examination.	Second examination.	Third examination.	First examination.	Second examination.	Third examination.	Whether inoculated.	Date of inoculation.	
5	Typhoid.	>1/250	—	—	0	—	—	0	—	—	0	—	B. typhosus.
8	? Enteric.	>1/500	—	—	0	—	—	0	—	—	0	—	,,
15	Typhoid.	>1/500	—	—	0	—	—	0	—	—	0	—	,,
20	? Enteric.	>1/500	—	—	0	—	—	0	—	—	0	—	,,
24	?	>1/500	—	—	0	—	—	0	—	—	0	—	,,
37	?	>1/500	—	—	0	—	—	0	—	—	0	—	,,
48	Enteric.	>1/500	—	—	0	—	—	0	—	—	0	—	,,
57	?	>1/500	—	—	0	—	—	0	—	—	0	—	,,
10	?	0	—	—	>1/500	—	—	0	—	—	0	—	B. paratyphosus (B).
21	? Enteric.	0	—	—	>1/250	1/125	—	0	—	—	0	—	,,
41	?	1/1,250	1/1,250	—	1/5,000	1/2,500	—	0	—	—	0	—	,,
42	?	1/1,250	1/1,250	1/1250	1/500	1/125	1/50	0	—	—	+	Aug., 1911, Aug., 1914.	,,
62	?	1/12,500	1/12,500	—	1/5,000	1/12,500	—	1/2,500	1/5,000	—	+	Sept., 1914.	* B. paratyphosus (B) and (A).
68	? Enteric.	1/2,500	1/2,500	—	1/12,500	1/25,000	—	1/12,500	? 1/25,000	—	+	Oct., 1914.	* B. paratyphosus (B) and (A).
49	? Enteric.	1/2,500	1/2,500	—	0	0	—	0	0	—	+	Aug., 1914.	Not typhoid or paratyphoid.
51	? Enteric.	1/5,000	1/5,000	1/5000	0	0	0	0	0	0	+	Sept., 1914.	,, ,,
52	? Dysentery.	1/1,250	1/1,250	—	0	0	—	0	0	—	+	1902, 1904. Sept., 1914.	,, ,,
53	?	1/2,500	1/2,500	—	0	0	—	0	0	—	+	Oct., 1914.	,, ,,
58	? Dysentery.	1/250	1/250	1/250	0	0	0	0	0	0	+	1908.	,, ,,
61	?	1/1,250	1/1,250	—	0	0	—	0	0	—	+	Oct , 1914.	,, ,,

When no agglutination occurred in a dilution of 1 in 25 the record is entered as 0.

* In these two cases, which are quite recent, it is still uncertain whether the agglutination observed is due to the presence of co-agglutinins or the result of a mixed infection with B. paratyphosus (B) and (A).

Conclusions.

1. It is of the utmost importance that our troops should be protected against paratyphoid infection as well as against the B. typhosus. This can readily be done by the use of a mixed vaccine

containing equal quantities of B. typhosus, B. paratyphosus (B), and B. paratyphosus (A). Men already inoculated against B. typhosus should also be inoculated against paratyphoid infection, since the antityphoid inoculation offers no appreciable protection against paratyphoid bacilli. The epidemics of typhoid fever reported to be occurring among the belligerents (who are all known to practise antityphoid inoculation) are probably to an important extent epidemics of paratyphoid.

2. Unless all cases of "enteric" fever are properly differentiated into typhoid and paratyphoid infection the statistics regarding the value of antityphoid inoculation among our forces in the present war will be most seriously vitiated. It is probable that the absence of accurate bacteriological diagnosis in the past explains the fact that the statistical results arrived at in our army have not always been so convincing as would otherwise have been the case.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

Cerebral Degeneration associated with Macular Changes.—Exhibition of Cases and of a Trench Periscope.

A MEETING of this section was held on Feb. 3rd, Mr. PRIESTLEY SMITH, the President, being in the chair.

Dr. F. E. BATTEN and Mr. STEPHEN MAYOU contributed a paper on Cerebral Degeneration associated with Macular Changes, and gave a pathological description of a case. Dr. Batten said that in these cases a curious pigmentation occurred at the macula, and usually also around it, and considerable optic atrophy was also present. Several of the examples of the condition which had been under his care died at Darenth Asylum. He exhibited the pedigrees of two families. In one case the changes in the macula were the last occurrences in the march of degeneration. The brains of these patients did not present any macroscopic abnormality, and they had the usual convolutional pattern, as well as the normal weight and relationship to the cerebellum. The brain and nervous system were examined by several staining methods. There was found to be some degeneration in the medullated fibres; in the cerebellum the myeline was breaking down and degeneration was present in the cells of Purkinje. The most profound change was in the Betz cells; instead of the Nissl granules there was a curious accumulation of fine granules around the nucleus. In the cerebellum were large granular cells not normally seen, and he could not say what their significance was. The most marked change was found in the child who had had the disease longest—namely, for three and a half years. There were marked changes in the fundus, a shrinking of the convolutions, and in some cases the Betz cells were too degenerated to show the vacuolation. This group was similar to the Waren Tay-Sachs cases of amaurotic family idiocy, but occurring at a later age and not race-selective. The disease now described was characterised by progressive blindness, progressive paralysis, and progressive dementia, but changes in the macula were not always present. Mr. Mayou dealt with the pathology of the eye condition. The child he examined had evidently lost all perception of light, but that was not so in all the cases. Immediately after death the eyes were injected and stained. The changes were confined to the retina, but varied enormously in different parts of the fundus. The principal change was round the macula region. The internal nuclear layers had disappeared altogether, also the rods and cones, and there was some migration of pigment from the retinal pigment cells.—The paper was discussed by Mr. J. H. PARSONS and Mr. TREACHER COLLINS, and Dr. BATTEN and Mr. MAYOU replied.

Mr. A. BERNARD CRIDLAND showed a case of Glass-workers' Cataract in an iron-smelter ("puddler"). He brought the case forward to give an opportunity for the discussion of the type of case in ironworkers in relation to industrial diseases, as these men were not included in the schedule. Considering the number of hours of exposure to the glare of the molten metal, his surprise was that there were not more cases, especially as these men rarely wore protective goggles. He suggested that a more inclusive term should be applied to the cases of cataract so caused, such as "ray cataract."—Mr. C. B. GOULDEN said he had a case now under care in a welder, and he thought an investigation would disclose that the condition was more common among ironworkers than was generally believed. The man who preceded his patient at the work also lost his sight. It was not until quite late that the workers complained, because owing to the dilatation of the pupil they were able to see round the cataract.—Dr. T. M. LEGGE (Home Office) asked as to the proportion of ironworkers afflicted with this condition, as it was necessary in considering the scheduling of diseases to proceed tentatively. In the case of glass-blowers' cataract there could be no question as to scheduling, as he examined the lenses of 513 glass-blowers, and found cortical cataract in 64 in the right eye and 72 in the left.—Mr. PARSONS said that as secretary of a Royal Society committee on the subject he sent many inquiries to ophthalmic surgeons practising in ironworks districts, and the negative replies he mostly obtained led him to the belief that it was the custom for moulders to wear tinted glasses. He asked for further evidence for his committee to continue their investigations.—The PRESIDENT suggested the name "furnace-workers' cataract," seeing that furnace work was common to all.

Dr. E. A. COCKAYNE and Dr. J. ATTLEE showed a case of Amaurotic Family Idiocy in an English child, not Jewish, as was the rule.

Mr. N. BISHOP HARMAN showed a case of Spontaneous Rupture of Cornea in Secondary Glaucoma caused by dislocation of the lens. An injury caused total dislocation of one lens into the posterior chamber, where it was loose. The resulting glaucoma was absolute and vision was lost. The cornea was anæsthetic and the iris quite retracted and immobile. The condition remained so for two years without ulceration of cornea or splitting of Descemet's membrane. Three months later, however, without any further accident, the cornea was split horizontally and membranes prolapsed, the cause having been retrochoroidal hæmorrhage.

The PRESIDENT showed a form of Trench Periscope he had just designed. At the top of a narrow shaft, 6 feet in length, is fixed at an angle of 45° a plane mirror, about 2½ inches in diameter, and an exact counterpart lower down, the distance from the first being adjustable by pegs and holes. Only the top mirror projects above the trench, and this can be largely concealed by a piece of earth. By looking straight into the lower mirror all movements can be plainly discerned without incurring danger.—Lieutenant-Colonel ELLIOTT pointed out how necessary, in order to estimate the distance of the enemy, it was to have the binocular form of periscope.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Fixed Chronic Retroversion of the Uterus.—Exhibition of Specimens.

A MEETING of this section was held on Jan. 15th, Dr. M. J. GIBSON, the President, being in the chair.

Dr. BETHEL SOLOMONS read a paper on Fixed Chronic Retroversion of the Uterus, in which he condemned all such palliative treatments as vaginal douches, tampons, rectal massage, &c., because, firstly, they seldom or never cured; secondly, they kept the patient a chronic invalid for the very

long time which it took even to relieve; thirdly, if the adhesions were so loosened that replacement could be effected and a pessary inserted the patient was in a position very little better than before. He advocated operation in all cases where there were symptoms. Curettage and any necessary vaginal plastic work were done first. The abdomen was then opened, and having treated the adhesions and any adnexal abnormality he suspended the uterus either by Kelly's method or by shortening the round ligaments as the case directed. Where pus was present he drained with iodoform gauze through the posterior fornix and vagina. He considered the abdominal route excellent for drainage, but preferred the vaginal because there was less pain in the removal of the gauze. No opening was left in the aponeurosis; hence hernia was less likely, and the convalescence was usually shorter. If pus was present it should always be taken for culture.—Mr. SPENCER SHEILL said he did not think that all the operations were equally satisfactory; each case had its own indications. All cases with which he had to deal were capable of being replaced; but in a case of markedly adherent uterus he would certainly agree that laparotomy was necessary, though he did not agree that ventral suspension should follow, since the amount of irritation produced by suturing was likely to bring about abortion.—Dr. GIBBON FITZGIBBON said that the drainage of pus tubes was a difficult point. He always felt that by fixing the fundus of the uterus, and then draining the pelvis through the lower angle of the wound, one ran the risk of making the suspension into a fixation, and in these cases, therefore, he thought there was a distinct reason for selecting the Gilliam operation; then, if adhesions were produced they would not cause fixation in the same way as if the uterus was fastened to the peritoneum. He preferred drainage through the abdomen where there was any real necessity for drainage. He had followed up several cases of pregnancy after ventral suspension and had never found that they had any difficulty in pregnancy or delivery, but in some of the cases retroversion recurred three or four weeks after delivery, though this was easily cured by replacement and retention in place by a pessary for six or eight weeks, and then remained in place without any further treatment.—Dr. D. G. MADILL said he did not think that all cases of fixed uterus required operation at all. Most cases that he had seen operated on in Berlin were done by the vagina, and there was no doubt that this method prevented the handling of the intestines, but he thought the abdominal route was preferable. He suggested that these cases were all due to infection, and if any intraperitoneal fluid could be obtained a culture should be taken.—Dr. E. H. TWEEDY said he thought that Dr. Solomons had well described the modern method of treating retroversion. He had never heard of pregnancy in a retroverted uterus being liable to cause rupture of the intestines. Abortion was not unavoidable even in a fixed retroverted uterus, and he therefore thought it a serious step to open the abdomen in such cases whilst the woman was pregnant. He was satisfied that the results were good in ventral suspension, and he had never seen any difficulty in delivery after it. His object was to fix the fundus of the uterus to the bladder, and by that means he obtained an absolutely mobile uterus which was free from danger in pregnancy and delivery. When he heard of relapse after ventral suspension he knew the operation had not been properly performed.—Mr. V. J. MCALLISTER said that the exact position and shape of the backwardly displaced uterus were of importance when such a uterus became pregnant. A pregnant uterus which was not only retroverted but also markedly retroflexed would, even in the absence of adhesions, have very little chance of righting itself spontaneously. The presence or absence of uterine descent would guide him, amongst other things, in his selection of an operation for restoring the uterus to its proper position. The Alexander-Adams operation did not lift the uterus to any great extent. It merely drew it forwards. He always ended up these cases by doing this operation provided there seemed to be no reason for attaching the uterus higher up on the abdominal wall. The disadvantage of suspension operations was that, owing to the traumatism of the peritoneum, apart from the question of sepsis, a considerably broader attachment to the uterus might occur than had been intended. Were the uterus very large he would excise portion of its anterior wall.—The PRESIDENT said that these cases of chronic fixed retroversion were always due to infection, and there were no symptoms which could be associated with the malposition alone. Symptoms attributable to the pelvis were due to the persistence of the pelvic inflammation or to the adhesions. Pain rarely existed if a sufficient interval had elapsed since the infection occurred. The fixation of the uterus and adnexa might cause dyspareunia and difficulty or pain during defæcation, but sterility and abortion were the most usual causes of complaint. The relief of fixation of the uterus and adnexa should only be considered when any of the symptoms mentioned were present. Laparotomy should be performed. After the adhesions were divided, and salpingostomy performed in cases of sterility, the round ligaments should be shortened. When symptoms due to the inflammatory condition persisted or recurred after a sufficient interval from time of infection in spite of thorough expectant treatment, as was most likely in gonorrhœal cases only, removal of the uterus, tubes, and ovaries gave the best results.—Dr. SOLOMONS, replying, said that he made it a rule if any pus could be obtained to take it for examination. He always followed Dr. Tweedy's teaching never to operate on fixed retroversion if there were no symptoms, but it seldom happened that patients consulted him if they had no symptoms. One should choose the operation which best suited the case. He did not agree that when a ventral suspension was performed it went back afterwards. It did not go back unless the operation was badly performed.

The PRESIDENT showed a Tumour from a patient, aged 47 and unmarried, complaining of uterine hæmorrhage every third week. Otherwise she was in good health, and was able to do her work, which entailed much cycling. The abdomen was found fatty and distended, but flaccid and tympanitic all over. There was no difficulty in palpating a fibroid uterus bimanually, but when the abdomen was opened a large thin-walled flaccid cyst, obviously subperitoneal, was found between the layers of the right broad ligament. The intestines were adherent to it. The peritoneum was divided between some of the coils of adherent intestine and the cyst shelled out. The fibroid uterus was then removed with the cyst *en masse*. The patient made a good recovery.

The PRESIDENT also showed a specimen removed from a patient, aged 35, unmarried. She felt perfectly well, but had noticed the abdomen increase in size three months previously. The tumour was impacted in the pelvic cavity, which it filled completely, and above the pelvic brim it swelled out into an enormous growth. There was no history of bleeding or pain, and only occasional difficulty in emptying the bladder. The uterus was found above the pelvic brim and crowded over to the right side; it was atrophied, and there were two small subserous fibroids in the fundus. There was difficulty in removing the tumour, which was growing from the left side of the uterine body and under the broad ligament. The huge cavity which was left was drained through the vagina, covered over, and the uterus left behind.—Dr. TWEEDY said he did not think the second specimen was a myoma at all. He recalled two similar specimens which subsequently proved to be retroperitoneal lipomata. The condition had never been diagnosticated before operation.—Dr. SOLOMONS said that fibromyomata of the broad ligament had been reported springing from the uterus and from the subperitoneal muscle fibres of the broad ligament.—Mr. SHEILL thought the shape of the specimen and the manner in which it adapted itself to the pelvis were in favour of lipomata.—Dr. MADILL, referring to the first specimen, asked if any remnant of ovary or uterus was found. In connexion with the second specimen he suggested that it was a myomatous tumour.—Mr. MCALLISTER said from the way in which the tissue cut he felt satisfied that it was a soft fibroma. There was also an absence of the coarsely lobulated appearance so characteristic of a lipoma when cut into after hardening.—Dr. R. J. ROWLETTE remarked that the observations of the operator at the time of operation would of itself help to decide whether the tumour was a retroperitoneal sarcoma or not. From the small amount of cut tissue to be seen he thought it looked more like a fibroid. Referring to the first specimen, he said there was a very unusual blending of the cyst and the myoma. He recollected Dr. Tweedy's specimens, and in both cases the tumour was higher up than in this case.

Mr. SHEILL showed photographs of a child born with an unusual frænum between the upper maxillary bone and the lip. It was not considered of great consequence at the time and was left, but as the child grew older it grew rapidly, and at the time of the development of the teeth he had to cut the frænum, which came level with the tips of the two central incisors. He suggested that an epithelial inclusion had been pressed out through the two mesial nasal processes.—Mr. G. P. MOORE, speaking from the dental surgeon's point of view, said that the condition was better dealt with early, as when it was not treated until after the eruption of the permanent teeth it caused excessive space between the centre incisors and often great irregularity and projection forward of the incisors, which was difficult to cure and very unsightly.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

Marsupialisation of Degenerated and Infected Fibroids.—Rupture of Uterus with Fatal Result.—Exhibition of Specimens.

A MEETING of this society was held in Manchester on Jan. 15th, Dr. J. H. WILLETT (Liverpool), the President, being in the chair.

Dr. W. E. FOTHERGILL (Manchester) mentioned two cases of Large Fibroids he had met with—one in 1899 and the other in 1914—whose adhesions were so dense and so universal that the growths could not be removed. In each case the degenerated tumour was scraped away by hand through the abdominal incision until nothing but a thin shell was left. The capsule was then stitched to a portion of the abdominal incision. In one case the cavity was packed with gauze, while in the other double drainage was provided by a long rubber tube, one of whose ends passed down into the vagina while the other opened through the abdominal wound. The latter method gave the better result as to rapidity of healing.

Dr. FOTHERGILL also described the injuries in a case in which the medical attendant performed version, and subsequently discovered a complete Rupture of the Uterus. The patient was aged 40, and the labour was her tenth at full term. She had also had five abortions. On admission to hospital the pulse-rate was 144, and the patient had lost so much blood that she was gasping. The abdomen was opened and its wall above the pubic symphysis was seen to contain extravasated blood. The peritoneum was torn from the pubic symphysis in front to a point near the lower pole of the right kidney. The bladder was exposed, with the exception of its trigone and the lower part of its left lateral aspect. The ureter and the blood vessels on the right side could not be traced through the mass of blood clot and lacerated tissue which occupied the right side of the pelvis and lower abdomen. The cæcum and appendix were torn from their bed. The uterus was quickly removed and the peritoneum was drawn together. A gauze drain was left *in situ* for 48 hours. The patient did well for four days, but suppuration occurred which was confined to the pelvis, and she died on the sixth day. The records show that this was the seventeenth case of serious rupture of the uterus treated by abdominal hysterectomy at St. Mary's Hospitals, Manchester, the first having been done by Dr. Walls in 1905. Of these 17 cases, 12 were successful, and these 12 women doubtless owed their lives to the removal of the uterus. Suture of the rent was not enough in serious cases of uterine rupture.

Dr. W. K. WALLS (Manchester) exhibited the following specimens: 1 A Rupture of the Pregnant Uterus through an Old Cæsarean Section Scar removed from a patient, aged 30, who had had three previous Cæsarean sections. The patient was seven months pregnant when sudden severe abdominal pain commenced, followed soon after by general collapse. The abdomen was opened and the peritoneal cavity was found to be full of blood, which was oozing from the top of the old Cæsarean section scar in the uterus. Supravaginal hysterectomy was performed, but the patient died from shock the same evening. 2. Cæsarean Section for Accidental Hæmorrhage oozing from the Scar of a previous Cæsarean Section. This patient had had one previous Cæsarean section and was within ten days of full-term pregnancy for the second time when she commenced with symptoms of accidental hæmorrhage. For this reason Cæsarean section was performed, during which the abdominal cavity was found to contain a large quantity of blood. This was oozing from the lower part of the old Cæsarean section scar in the uterus, which was very broad and thin and would probably soon have opened out along its whole length. Supravaginal hysterectomy was performed, and the patient made a good recovery.

Dr. W. FLETCHER SHAW (Manchester) exhibited a specimen of Spontaneous Rupture of Old Cæsarean Section Scar in a Full-term Pregnant Uterus. This patient had had one previous Cæsarean section and was within a week of full term in her second pregnancy, for which Cæsarean section was again going to be performed, when severe abdominal pain commenced during the night while the patient was in bed. Six hours later she walked to the hospital, arriving in a collapsed condition, still complaining of severe pain in the middle line of the abdomen from the umbilicus to the pubes, and this portion of the abdomen was very tender. The pulse was fluttering and uncountable, and the temperature subnormal. The abdomen was opened and the old uterine Cæsarean scar then found to have completely opened up, so that the child was delivered without any enlargement of this wound being required. The placenta was on the anterior surface of the uterus, and plugged the wound. At the time of operation no further bleeding was taking place, but the lower part of the abdominal cavity was filled with blood clot. Supravaginal hysterectomy was performed, and the patient made a good recovery.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A pathological meeting of this society was held on Feb. 5th, Mr. Aslett Baldwin, the President, being in the chair. The President showed specimens of: (1) an Innocent Tumour of the Submaxillary Gland which simulated malignant disease; (2) Stricture of the Transverse Colon; and (3) (with Dr. Reginald Morton) radiographs of a Large Ureteral Calculus in a youth aged 15½ years. One of the radiographs was taken after collargol had been injected up the ureter. This completely surrounded the calculus and thus verified its position. At the operation the ureter above the calculus was found dilated to about the size of the small intestine.—Mr. McAdam Eccles showed specimens of (1) Gall-stones (*a*) causing obstruction, (*b*) loose in dilated gall-bladder, (*c*) blocking the cystic duct; (2) Vermiform Appendices showing (*a*) mucocele, (*b*) papilloma, (*c*) perforation protected by omentum, (*d*) colloid carcinoma, (*e*) diverticulum from the side opposite the mesentery.—Dr. E. A. Saunders and Dr. R. R. Elworthy showed specimens of two cases of Congenital Disease of the Heart with death from broncho-pneumonia.—Dr. Elworthy also showed a number of interesting pathological specimens, including one of Aneurysm of the Posterior Communicating Arteries, and also one to illustrate Recurrent Laryngeal Palsy in a child aged 2 years.—Dr. Saunders and Dr. Morton showed radiograms illustrative of Progressive Stages of Early Pulmonary Tuberculosis in Children; also radiograms showing the Lung Picture in Early Pulmonary Tuberculosis before and after sanatorium treatment.—Dr. H. J. F. Simson showed specimens of Ovarian Cysts, Uterine Carcinoma, and the Fallopian Tubes from a case of Tuberculous Peritonitis.—Mr. N. Bishop Harman showed specimens illustrating (*a*) Spontaneous Rupture of the Cornea in Secondary Glaucoma caused by Dislocation of the Lens; (*b*) Panophthalmitis, due to hatpin wound; and (*c*) Sympathetic Ophthalmitis following subconjunctival rupture of the sclerotic.—Dr. Saunders also showed specimens of the Indian Leech, recently introduced by the efforts of Professor A. E. Shipley, to counteract the present shortage of the usual supply from the continent.—Commenting on the President's specimen of intestinal obstruction, Dr. Seymour Taylor pointed out that while obstruction due to malignant disease was placed among the chronic forms, rightly in most cases, clinical experience showed that malignant obstruction might be acute, and cases occurred in which the sufferer was entirely ignorant of the grave disease he had until some urgent condition called for the advice of his medical attendant.—The President and Mr. F. G. Lloyd referred to the very interesting series of specimens shown by Mr. McAdam Eccles, some of them almost unique. Particular mention was made of the size to which gall-stones and other concretions could reach without giving rise to any serious symptoms, and conversely how frequently a comparatively small

calculus called for immediate operation to save life.—Colonel T. H. Hendley, I.M.S., commented upon Mr. Bishop Harman's specimens, and cited a case of sympathetic ophthalmia following perforation of one eyeball by a single pellet of shot.—Dr. Saunders having been called away, Dr. Morton referred to the skiagrams he had made of the cases of early pulmonary tuberculosis in children. These were from children in whom the physical signs were either entirely absent or so few and slight as to make it impossible to form any definite opinion on their condition. The X ray appearances in all of them were quite definite, and such as are found in cases proved to be tuberculous. Considering the importance of an early diagnosis in indicating the proper treatment at the earliest possible time, he urged the advisability of a radiographic examination of the lungs in those children who, while presenting no definite signs of any particular disease, were not thriving and enjoying life as others of the same age. With regard to the lung picture before and after sanatorium treatment, here as elsewhere once the bacillus had obtained a footing for a definite period of time a permanent mark was left as evidence of the unwelcome visitation. The markings in the lungs after successful treatment followed the same general plan as before; some of the finest "mottling" might have disappeared, but the chief difference might be described as one of diminished contrasts in the picture.—Mr. Lloyd was not so sure as to how much reliance was to be placed on the X ray findings, and considered that while the radiographic method might be a useful adjunct to other methods of diagnosis it had by no means superseded them. At the same time he paid a tribute to the advances made in radiography in recent years.

Reviews and Notices of Books.

Pharmacology, Clinical and Experimental.

By Dr. HANS H. MEYER, of Vienna, and Dr. R. GOTTLIEB, of Heidelberg, Professors of Pharmacology. Authorised translation into English by JOHN TAYLOR HALSEY, M.D. With 65 text illustrations, 7 in colour. London and Philadelphia: J. B. Lippincott Company. 1914. Pp. 604. Price 25*s.* net.

TAKEN in its widest sense experimental pharmacology is the relation of organisms under chemically changed conditions of environment, and must therefore be regarded as a department of biology. The authors treat the subject from two aspects, organotropic—i.e., the action of drugs on function—and etiotropic, their action in disease. The pharmacology of the following systems is dealt with in succession—motor nerve endings, central nervous system, sensory nerve endings, the vegetative system, eye, digestion, genital organs, circulation, respiratory organs, the renal function, sweat secretion, metabolism, muscle, blood, temperature, and inflammatory phenomena. A special chapter discusses pharmacological effects on the causes of disease and deals with antiseptics, anthelmintics, and antitoxins, acquired immunity, serum therapeutics, the serum treatment of tetanus and diphtheria, and bacteriolysis. The last chapter is devoted to the conditions necessary for the action of medicaments, such as solubility, concentration of the drug in the blood, the condition of the organism itself to be acted on, antidotes and antagonism, and the various refractive or hypersensitive conditions that are included under the term idiosyncrasy—not forgetting anaphylaxis.

In the chapter on motor nerve endings curare is very fully dealt with—although it is but little used in medicine—because it gives such a good example of localised action, as well as affords a typical instance of how the action of a drug can be studied. As to the pharmacology of the central nervous system, drugs may either increase or diminish its functions, but cannot change these functions qualitatively. This section is treated in a lucid, practical, and even masterly manner. First those drugs that excite, such as strychnine, and then those that depress and paralyse central nervous functions are discussed, special attention being given to the morphine group. Morphine itself occupies a peculiar position owing to its striking and wonderful property of subduing pain, although morphine does not diminish the excitability of the brain and cord to the same extent as such narcotics as alcohol and the chloroform group. Special attention is drawn to its action on the respiratory centre. Alcohol and inhalation anæsthesia, including ether and chloroform, are next considered. Chloral and its cumulative perils are set forth, while trional, veronal, and their allies are discussed and their uses and dangerous effects commented on. The well-known theory of narcosis of Meyer and Overton is elaborated and the importance of lipoids is emphasised. Local anæsthesia is fully treated, most emphasis being laid on cocaine and its allies. There is a good coloured plate illustrating the sympathetic nervous system. The monograph on the eye in relation to drugs is concise and practical. The pharmacology of the digestive tract is treated discreetly in about 60 pages, while 100 are given to the circulatory organs. The treatment of the action of digitalis is particularly good.

We have instanced only a few points why we cordially commend this treatise to all interested in the progress of pharmacology in relation to scientific medicine. Much praise is due to the translator, who is professor of pharmacology, therapeutics, and clinical medicine in Tulane University.

A History of the Indian Medical Service, 1600–1913.

By Lieutenant-Colonel D. G. CRAWFORD, Bengal Medical Service (retired list). London: W. Thacker and Co. 1914. Pp. 529 + 535. Price 28*s.* net.

IN two handsome octavo volumes there has at length appeared a detailed history of the Indian Medical Service worthy of its subject and fit to rank with any of the regimental histories of the British army hitherto published. Of the 45 chapters the first 12 are concerned with the early history of European medicine in India before the formation of the Bengal Medical Service in 1763. The next 15 describe the chief features in the official history of the three separate medical services in Bengal, Madras, and Bombay, and also give a large amount of information on many matters of professional and social interest. Chapters XXVIII. to XXXIV. give in more detail special records of distinguished medical men of the Indian establishment; and in the following 10 chapters are discussed the recent history of the Service and medical matters in India generally.

His brother officers, and all concerned with medical practice and education in the East, are indebted to Colonel Crawford for his researches and for the clear manner in which they have been presented to the reader. Many curious sidelights are thrown on old-time Anglo-Indian life which will make the book interesting to the lover of the past; but its main purpose has been to record the gradual evolution of the present homogeneous and uniform service from the small beginnings of the seventeenth century, showing how in the true British way mistakes are made, and order and success

eventually attained by the means of these mistakes. As the author quotes from Emerson: "They builded better than they knew." We may mention that each chapter has an appropriate poetical heading, which relieves the somewhat dry recital of records and regulations. We regret to learn that the time-honoured story of the cure of Shah Jehan's daughter by Gabriel Boughton, and the consequent bestowal on him of a grant in favour of the Honourable East India Company, has no foundation. The Bengal Medical Service was founded in 1763; on two occasions, in 1766 and 1796, it was divided into two separate services, military and civil, and each time the separation was found to be impracticable, and the two branches were again united. Administrative officers of the Army Medical Department were first appointed to India in 1825, and friction appears soon to have arisen between the two services.

Colonel Crawford is doubtful as to the suitability of the present system of instruction for I.M.S. officers. He considers that Indian diseases would be better studied in India, in the large hospitals of the Presidency towns, which provide an extensive field for research, and are now well equipped with modern appliances. The recent history of the Service is treated of in detail as regards scientific, military, civil, and professional matters. The author believes that the regimental hospital system will be abolished in the Indian as it was in the British Army. It "has outlived its usefulness." A closer relationship between the military and civil branches is desirable. How it is to be brought about is not yet apparent. Professor Maclean's Christian names were William Campbell, not William Charles; G.C.B. stands for Grand Cross, not Grand Commander, of the Bath (p. 210). A list of Fellows of the Royal Society in the Indian Medical Service would be acceptable.

Colonel Crawford is to be highly congratulated on the successful accomplishment of his task, while the volumes are extremely well printed and well got up.

Flies in Relation to Disease: Non-Bloodsucking Flies.

By G. S. GRAHAM-SMITH, M.D. Cantab. Cambridge: University Press. 1914. Pp. 389. Price 12*s.* 6*d.* net.

WE have already noticed the first edition[1] of this handbook, but the second edition is not merely a reprint with a fresh preface. It is an amended and enlarged replica of the original edition, though appearing only a year later. Even with such excellent assistance as is offered by the *Zoological Record* it is hard to be sure that a bibliography upon a given zoological subject is exhaustive, and the difficulty obviously increases with the length of the list of titles of works given. The author finds 25 pages fairly closely printed necessary for bringing the reader in view of what has been written concerning the muscidæ and other non-biting flies. It is not therefore surprising to learn that Dr. Graham-Smith has found that he neglected a few memoirs in the earlier edition. These are duly intercalated in their proper places in the present revised bibliography. The work to which these papers refer is, however, separately dealt with in an appendix, together with more recent work which has appeared since the first edition of the book was published. This appendix occupies nearly one hundred pages, and is a testimony to the immense output of scientific work nowadays. It appears from an inspection of the lists of titles that a large amount of this collected work is from British sources; much also is American, much French, and rather less Italian. The Germans do not bulk so largely.

[1] THE LANCET, March 14th, 1914, p. 756.

Gonorrhœa and its Complications in the Male and Female.

By DAVID WATSON, M.B., C.M. Glasg., Surgeon Glasgow Lock Hospital; Dispensary Surgeon for Venereal Diseases, Glasgow Royal Infirmary, &c. With 72 illustrations and 12 plates, 9 of which are in colours. London: Henry Kimpton. 1914. Pp. 375. Price 15*s.* net.

IT is only within recent years that the importance of gonorrhœa has been recognised, even by the medical profession, and still it is regarded as a trivial affection by the general public. It is now acknowledged that there is room for discussion whether it is not on the whole a more serious disease than syphilis, when all its numerous complications and sequelæ are borne in mind. This book contains one of the best accounts that we have seen of this disease and its treatment; it is comprehensive, it is eminently readable, and above all it is extremely practical. The author, while mentioning carefully the various methods which have been employed in treating the different conditions which may occur, explains the grounds on which choice between them should be based. With regard to the use of gonococcal vaccine he speaks very definitely; he says that though he is convinced that the vaccine has a specific power to modify the disease, yet he is equally convinced that as yet we have not worked out the data necessary to enable us to use the vaccine with sufficient control over its therapeutic action to justify its indiscriminate employment.

The absence of references to original papers should be corrected in future issues.

LIBRARY TABLE.

Text-book of Massage and Remedial Gymnastics. By L. L. DESPARD, Member and Examiner, Incorporated Society of Trained Masseuses. Second edition. London: Henry Frowde, Oxford University Press, and Hodder and Stoughton. 1914. Pp. 413. Price 12*s.* 6*d.* net.—Those who practise massage require to have a knowledge of a certain amount of anatomy, but it is by no means easy to determine what are the exact limits of the anatomy they should be taught. In this volume we cannot help thinking that the author has included too much, though perhaps this is an error in the right direction. It is surely unnecessary to include in such a work as this details as to the surfaces of the fibula or the origin and insertion of the pectineus muscle. At all events, we may rest assured that very few students of massage ever learn such details as these. Apart from these strictures we have nothing but good to say about this book; the student of massage will find all that he needs in it. The large number of illustrations add to the value of the work; those representing anatomical structures come from "Cunningham's Anatomy."

Essays and Addresses. By the late JAMES CAMPBELL BROWN, D.Sc. Lond., LL.D. Aberd. With a portrait and 22 illustrations. London: J. and A. Churchill. 1914. Pp. 208. Price 5*s.* net.—We can cordially recommend these essays to the notice of

students intending to take up chemistry as a profession, particularly in its industrial applications. The late Dr. Campbell Brown, who was professor of chemistry in the University of Liverpool, possessed an intimate acquaintance with the relations of chemistry to the every-day affairs of human life, and at this moment when great opportunities are opening for extending our chemical industries his essays on such subjects as "A French View of German Industries," "What is Technical Education?" "Chemistry as a Profession," "Analytical Chemistry as a Profession," "The Ethics of Chemical Manufacture," come opportunely in this publication. His counsels are good and most interesting in view of the "decadence of English chemical industry" (see ill-informed writers *passim*).

The Midwives' Companion. By FÉLICIE NORTON. London: J. and A. Churchill. Pp. 101. Price 1*s.* net.—This book is intended for the use of senior students and midwives. In our opinion the author is ill-advised to lay so much stress upon asepsis and to say so little about antisepsis, a much better practice for midwives than any attempt to carry out strict asepsis. We cannot agree with the recommendation of Schultze's method for the revival of a child suffering from white asphyxia, and we entirely disagree with so-called aseptic plugging of the vagina by a midwife for a case of placenta prævia. The author might have been more careful in her revision of her proofs.

Manual of Training for Jungle and River Warfare. London: T. Werner Laurie. Pp. 124. Price 3*s.* 6*d.* net.—Major Gordon Casserly, of the Indian Army, has put together in this little book a great deal of useful information. From the medical point of view his advice generally is sound and clearly expressed. Many native terms are used which might have been translated or explained, and it would have been useful if he had stated what are "the usual precautions" to prevent contamination of a water-supply. It is not customary to carry an enema syringe in a "pocket case" (p. 83), and 1 in 100 carbolic acid is not an efficient application to wounds. The preventive measures against malaria might have been given more fully. On practical matters regarding warfare in the jungle and on river banks the book is most useful. It is well illustrated by the author.

The Book of Prescriptions. By E. W. LUCAS, F.I.C., F.C.S. Tenth edition. London: J. and A. Churchill. 1915. Pp. 371. Price 6*s.* 6*d.* net.—The enormous number of drugs brought into use since the last edition of this book was printed would have rendered a fresh issue imperative, even in the absence of a new determining cause in an alteration in the list of official drugs. A new British Pharmacopœia, casting out many drugs and absorbing a few fresh articles which have found favour with the medical profession, has led to a revision which is likely to be of great service. As a member of the British Pharmacopœia Reference Committee Mr. Lucas had already done work which has received special acknowledgment, and it may therefore be assumed that he will be a safe guide in many of the pitfalls presented by the new standard. The prescriptions should be frequently consulted by beginners who are anxious to adopt the metric system; they are printed in parallel columns with a formula of familiar appearance on the left hand, and with the equivalent in the metric system on the right. These object lessons will be very useful to those who wish to move with the times. Information relating to many new unofficial remedies has been included, but there is no indication of its unofficial character; it might have been well to mark such paragraphs with an asterisk or other sign. The list of synonyms on page 15 appears rather antiquated in attempting to encourage mystification. When preparing the next edition with greater leisure it would be well to secure more consistency and to employ the official names and contractions; on the first page it is a surprise to find "hexamethylenetetramine" where the official title "hexamine" should have appeared. We meet with Spirit. Chlorof. and with Sp. Chloroformi, with P. Saponis and Pulv. Saponis, with P. Boracis and Pulv. Boracis. These minor blemishes, however, do not materially detract from the general utility of the book; they are more than counterbalanced by the precision of the text and by the numerous hints to prescribers and dispensers.

MISCELLANEOUS VOLUMES.

NEVER did the British Empire and race stand in more urgent need of the greatest possible excellence in mothercraft than at this present time, when the European nations are engaged in a death struggle. The National Association for the Prevention of Infant Mortality and for the Welfare of Infancy has done well in putting forth, under the title of *Mothercraft* (London: The National League for Physical Education and Improvement. 1915. Pp. 244. Price 3*s.* net), a course of lectures delivered under its auspices during the winter quarter of last year at the Royal Society of Medicine and Charing Cross Hospital Medical School. These lectures are 16 in number and cover the subject of antenatal preparation of the mother, various forms of infant feeding, the general and special ailments of children, and the establishment and working of infant welfare centres. The medical contributors are Dr. C. W. Saleeby, Dr. Amand Routh, Dr. Harold Waller, Dr. F. Langmead, Dr. Eric Pritchard, Dr. H. C. Cameron, Dr. Ronald Carter, Dr. D. Forsyth, Lieutenant-Colonel E. Roberts, M.B., Mr. Sydney Stephenson, Mr. Macleod Yearsley, Mr. C. E. Wallis, Mrs. Florence Willey, M.D., and Dr. F. J. Allan. Marion Fitzgerald writes on How to Visit Homes, and Miss M. B. Synge adds a chapter on the Clothing of Infants. To the end that the book may be widely read by Englishwomen of all classes it would seem desirable that a much cheaper edition should be published.

An interesting series of lectures on *Science and Religion*, delivered by eminent men of science in Browning Hall, London, during "Science Week, 1914," has recently been published (London: W. A. Hammond, Holborn Hall, E.C. Pp. 138. Price 1*s.* net). The lectures are as follows: Help from the Unseen, by Sir Oliver Lodge, F.R.S.; the Supreme Intelligence in and above Nature, by Professor J. A. Fleming, F.R.S.; Religion the Crowning Stone of Science, by Professor W. B. Bottomley, F.C.S.; the Witness of Geology to Revelation, by Professor Edward Hull, F.R.S.; Science and the Unknown, by Mr. John Allen Harker, F.R.S.; the Origin of Life, by Professor G. Sims Woodhead, F.R.S.; Religion and Science, their Alleged Incompatibility, by Professor Silvanus Thompson, F.R.S. In these essays the reputed incompatibility between the fundamentals of religion and the facts and principles established by science in its various branches is critically investigated by men of established reputation in the scientific world, who put forward reasons for holding that a study of the material aspect of nature, so far from negativing the grounds for a belief in a spiritual substratum and origin, entirely supports such a view. An introduction describes the aim, the speakers, and the meetings, while Mr. J. E. Stead, F.R.S., adds a rider in the shape of a suggestion that religion must be scientific, by which is meant that its further investigation must be conducted by scientific methods. The book contains portraits and brief bibliographical notes of the speakers, and is well worth reading.

The Balkan Cockpit, by W. H. CRAWFURD PRICE (London: T. Werner Laurie. Pp. 369. Price 10*s.* 6*d.* net), is a pleasantly written chronicle of the war of 1912–13 between the Balkan Alliance (Bulgaria, Greece, Montenegro, Serbia) and Turkey, together with the ensuing war between the Allies—namely, Bulgaria against the other three. The downfall of Turkey in the first instance and the defeat ot Bulgaria in the second are still bearing fruit in the presenf general European conflict. From a medical point of view the most interesting portion of the book is the account which Mr. Price gives of the admirable paper organisation of the Turkish military medical force and its hopeless breakdown in action. Further, although the Turkish Red Crescent organisation worked well the authorities thereof refused to lend a helping hand to their military brethren, whose hospitals were lamentably understaffed and were without food, medical comforts, bandages, or medicines.

Miss ETHEL C. HARGROVE went to Portugal on the invitation of the Sociedad Propaganda de Portugal as a member of the British International Association of Journalists, and her book, *Progressive Portugal* (London: T. Werner Laurie. 1914. Pp. 276. Price 6*s.* net), is a brightly written, if superficial, account of what she saw and did there. Portugal, which has been Britain's ally from the time of the Crusades, is a country with a most interesting history. Its climate, architecture, and vegetation are all fascinating and but little known to the majority of British travellers. The recent change of government has apparently been of an awakening nature, and Miss Hargrove points out that the Republic took early steps to reorganise the public institutions, especially the hospitals, which are now being modernised all round. The book is supplied with a map and with numerous illustrations, but we have also noticed an unduly large number of misprints.

Of books for students of the résumé class there are two kinds—those that should be unhesitatingly condemned for inherent defects and those that are not dangerous unless improperly used, and may even serve a useful purpose if used merely to systematise knowledge. To the latter class belongs *Aids to Pathology*, by Dr. HARRY CAMPBELL (London: Baillière, Tindall, and Cox. 1915. Pp. 228. Price 3*s.* net; in cloth 3*s.* 6*d.* net). The third edition of this book contains much additional matter on immunity. A chapter on diseases of the heart has been added, and there is considerable amplification in other directions.

JOURNALS.

British Dental Journal.—The first January issue of this journal contains a paper by Mr. W. Hern on Oral Hygiene and Prophylaxis. After recounting the various conditions giving rise to gingivitis Mr. Hern discusses the most efficient means of keeping the mouth in a state of cleanliness. He seems to think that reliance can be placed upon the use of the tooth-brush, and suggests patterns of brushes to be used as well as the methods for brushing the teeth. He discusses briefly the value of tooth powders, and incidentally does not place much reliance upon the use of antiseptic washes. The discussion on the paper is printed, and many of the speakers obviously thought that the question of oral hygiene and prophylaxis should be approached from rather a broader point of view than that suggested by Mr. Hern—viz., on the broad lines of dietetics and efficient mastication.—Mr. W. H. Gilmour reports an interesting case of fractured teeth from a bullet, the bullet having indentations on both upper and lower surfaces.—Mr. Arthur Underwood contributes a very interesting letter on the question of the scarcity of dental practitioners, and thinks that the cause rests in the unsatisfactory condition of dental legislation.—The issue for Jan. 15th contains an article by F. W. Broderick on The Relation between Calcium Metabolism and Dental Diseases. The author discusses the manner in which calcium is found in the body, and describes how the calcium balance is maintained. He considers that caries is the result of a deficient calcium output, which reduces the alkalinity of the saliva, while he regards periodontal disease as due to calcium saturation, the excess salts being deposited around the necks of the teeth and, acting as mechanical irritants, press the gum's margins away and lay them open to infection. There is a reprint of a lecture by Mr. Howard Mummery on Calcification; also two letters dealing with the question of shortage of qualified dentists.

New Inventions.

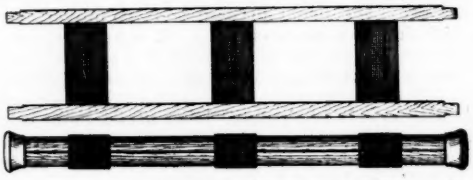
VENTILATED ELASTIC STOCKINGS FOR VARICOSE VEINS.

THE medical profession will, I think, be glad to have their attention called to a ventilated stocking which I have recently been employing in cases of varicose veins associated with eczema. In these cases patients often complain bitterly of the almost intolerable itching provoked by the heat inseparable from the use of stockings of solid elastic. The substitution of perforated bandages is but a partial remedy for the drawback, the necessary overlapping of the folds of the bandage neutralising to some extent the effect of the perforation. The intense irritation suffered in an exceptionally severe case of mine prompted me to consult Messrs. Maw, Son, and Sons as to the practicability of constructing an elastic stocking on the principle of cellular clothing. The attempt was made, and made successfully, for I have tried the stocking in a number of appropriate cases and have found that it admirably fulfils the desired purpose of affording support without heat. The stocking, composed of finely meshed silk and elastic, supports the distended veins not less effectually than does a stocking of solid elastic, while permitting free ventilation. For obvious reasons, in cases in which there is discharge it must not be applied until the exudation has ceased. Where economy is an important consideration cotton can be substituted for silk, and, whether made of the one material or of the other, the stocking can be employed with advantage in cases of uncomplicated varicose veins as well as in those in which there is associated eczema.

Harley-street, W. MALCOLM MORRIS, F.R.C.S. Edin.

THE "STICK" LEG-REST.

THIS ingenious little invention consists of a very stout stick split in halves, the halves being joined by bands of webbing, as shown in the picture. The halves, closed and secured by a thick rubber cap on each end, make a stout walking-stick. When the halves are separated the stick becomes a leg-rest of a very comfortable sort in any position; each half is converted into an adjustable splint, the leg



resting comfortably on the webbing. The length of the stick is 33 inches, so that as a rest the apparatus just fits across the seat of a railway train. The removing the caps to open up the stick is simple, and the caps are very substantial, so that they may not be worn out by use as ferrules. The price of the stick leg-rest is 4*s.* 6*d.*, and all communications should be made to Mr. George Marshall, Seymour Works, Seymour-place, Bryanston-square, London, W.

BELGIAN REFUGEES UNDER THE INSURANCE ACTS.—A circular of the Local Government Board addressed to local refugee committees has given explanations as to the position of Belgian refugees towards insurance when they obtain employment in this country. Employers have to pay the same contributions whether they employ their countrymen or Belgians. The refugee in certain circumstances may claim exemption, as may the British subject. The Belgian, if insured, must obtain a card and either join an Approved Society or remain outside, as he may prefer. His benefits from the society will be such as it is in a position to give in return for his contributions. He will, in fact, be in the position of an ordinary foreigner. By joining an Approved Society he will usually become entitled to medical and sanatorium benefits at once, but will not be in the same position as a British subject with regard to other benefits.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 13, 1915.

The Invalid and the Fighting Line.

WE called attention recently to a striking manifestation of patriotism shown by subjects of aortic insufficiency who, while quite aware of the nature of their disability, had nevertheless been found in the fighting line of the French army. A recent report to the Académie de Médecine has shown that this display of heroism has been widespread, incidentally proving that compensation in quite serious cardiac lesions is for a time often very complete. The situation, however, that may arise from the successful attempt upon the part of a physically damaged man to enrol himself in the army as sound may be so serious that while we admire we regret such exploits. And the French army is not singular in providing examples. The experience of the medical men who passed recruits for enlistment in our rapidly created army was, as is known, satisfactory on the whole: it entirely contradicted the more gloomy prognostications of the untiring prophets of our physical decay as a nation, while the summary inspection led to the immediate remedy in many cases of minor evils which in all probability would have otherwise gone unattended, inasmuch as their subjects had finished their school careers before the national system of inspection was in effective order. The good health now maintained in our army is a proof that in physique and stamina there has not been the widespread deterioration which in many magazine articles we were asked to face; while on the other hand the capacity shown by masses of men drawn from every class, varying in age by 20 years, and in many cases not distinguished by external signs of rude health or muscular vigour, to endure the shocks of actual war as well as the strenuous labour of military training, has been surprising. There has, of course, been from time to time sickness in different camps, but by treatment and prevention, by the coöperation of the medical and sanitary branches with military chiefs who understood the importance of hygiene, the health of our troops has been conserved in a wonderful manner. But undoubtedly a certain number of unfit men were accepted. The work of the recruiting medical officers in the first days of stress was done at full speed, and we have all heard of individual cases of recruits whose disabilities for a military life were manifested very quickly. And it was quite well known that the enrolment of some of these men was not due so much to the hurry of the recruiting procedure as to that very spirit of heroism which has been so markedly displayed by cardiac subjects in France.

At the meeting of the Académie de Médecine of Paris M. Ch. FIESSINGER reported some truly remarkable cases in which the subjects of other forms of heart disease showed as much staying power as those suffering from aortic insufficiency. The declaration of war caused, said M. FIESSINGER, the national energies to manifest themselves in an "élan incomparable," and under the stimulus failing organs worked better for a time. Those who had good reason to remain at home ignored medical advice and went to the frontier like the others. M. FIESSINGER referred to 12 cases, in 6 of which the patients were retired officers. The remaining 6 were officers in the army, who would no longer incur the shame of being considered "infirmes" and followed their comrades. The diseases present in these 12 cases were as follows: in 5 affections of the myocardium (myocarditis or renal heart), paroxysmal tachycardia in 1, and valvular disease in 6 (3 cases of mitral regurgitation, 1 of mitral obstruction, and 2 of aortic insufficiency). The treatment usually followed was administration of 1/10th of a milligramme of crystalline digitalin for two or three consecutive days as a prophylactic when the heart was not failing, and the same dose for 10 consecutive days with intervals of four days when there were signs of myocardial failure. As might have been foreseen, the subjects of valvular disease stood the campaign better than those who had myocardial disease. An infantry captain and two lieutenants who had well-compensated mitral disease were able with the aid of digitalin to endure the fatigue of the life of combat. An officer, aged 23 years, who had retired from the army in consequence of aortic insufficiency, rejoined and took part in the battle of the Marne, but forgetting to take his digitalis his heart dilated. He rested for a fortnight and then returned, but was discharged in spite of his protestations. An officer, aged 26 years, who had retired from the service in consequence of aortic insufficiency, re-engaged as an aviator. In the middle of August he fell with his machine from a height of 20 metres. His shoulder was dislocated and he was covered with bruises. He came to M. FIESSINGER for examination of his heart. He was doing well, and he soon resumed aerial work. A major in the medical corps suffering from mitral obstruction remained alone on the field with more than 700 wounded after the disaster in Lorraine to the 15th Corps. He was taken prisoner and afterwards exchanged for a German army surgeon taken prisoner by the French. He rejoined his corps and passed many days and nights at the front until increasing dyspnœa vanquished him. To M. FIESSINGER'S advice to take a fortnight's rest he replied that it was impossible. He kept his bed for 48 hours and then rejoined. Two officers—one an "intendant général" in the Army Service Corps, on whom depended the supplies of food of 350,000, the other a major in the veterinary service, who slept on straw for several weeks at a time, treating men more often than horses, and giving numerous injections of

antitetanic serum—suffered from renal heart with tachycardia and cardiac gallop. Yet they have been through the campaign for over three months and are still well. Such devotion, said M. FIESSINGER, is a magnificent page in the annals of France.

We have every sympathy with the urgent desire of him who, despite some physical condition that might prove a bar, desires to enlist, but a good physical standard of all is an absolute necessity for the common safety of an army. Modern conditions of war have made that standard much more elastic; place has been found in the ranks for the small man, for the man who is too tall (theoretically) for his weight, for the man who wears glasses, and for much other first-class material that formerly could not be employed; but there should be no leniency shown towards the applications of those whose infirmities might prove a source of danger to others. The recruit who deliberately conceals his epileptic history is not serving his country really; he cannot remain in the ranks while subject to such a disease, and his detection may be the sequel to a tragedy. It is possible to condone the case of the healthy middle-aged man who confuses his chest measurement with his age in entering himself as 37; many victims of cardiac disease do not themselves know their plight, and if they are admitted to the army the fault is not theirs; but those who conceal conditions difficult to diagnose, which, if known, would rightly debar them from military service, make an error—even though a gallant one; for they might break down at a moment when upon their efficiency depended the safety of many comrades.

The Physiology of the Minute Quantity.

A GOOD many years ago chemists talked of catalytic action, and the expression then was, as most must confess, merely a convenient expression. What it really meant was that a chemical reaction between two agents was highly stimulated by a third, albeit this third body was infinitesimal in quantity and unchanged. We now possess a quite large number of examples in which catalysis plays an important and even essential part not only in inorganic chemical changes but in life processes also. Taking an example of pure chemistry first, the union of hydrogen and oxygen in practically unlimited quantity may be effected, as is well known, by mere traces of colloidal platinum, while without its intervention the elements might remain for ever apart. The common and striking feature of catalysis is that the quantity of the catalyst is very small compared with the quantities of the main reacting substances, and this feature is also illustrated in the action of the organic catalyst, the enzyme. The enzymes, in fact, bear a close analogy to the ordinary inorganic catalysts. Thus the enzyme invertase is capable of inverting 100,000 times its own weight of cane sugar, and its activity is practically unimpaired through the process, particularly when the ultimate product is removed as fast as it appears.

A more recent development of catalysis has been made in plant physiology, which promises to be of the utmost importance to agriculture, while the circumstances in which we live necessarily turn the attention of thoughtful people to the productivity of the soil. It has been found that minute traces of certain mineral bodies may promote or hinder healthy plant growth, just as the presence of a minute quantity of iodine in the thyroid gland determines its activity. In a suggestive monograph forming one of the agricultural series issued from the Cambridge University Press,[1] Dr. WINIFRED BRENCHLEY records the results of some experiments made at Rothamsted experimental station on the influence of certain metallic compounds on vegetable growth. The trials are by no means complete, but they indicate that a very interesting and entirely unexplored field is being approached. The prospect at any rate is opened up of the possibility of utilising certain stimulating compounds as artificial manures, and Dr. BRENCHLEY points out that as only small traces are beneficial, larger amounts being poisonous to the plant, it is obvious that only small quantities would be needed. Again, the compounds are not usually very expensive and thus a considerable increase of crop for a relatively small outlay might be anticipated if no complicating factors intervened. In this interesting investigation a very limited number of plant poisons were investigated, but sufficient evidence was adduced to show that even these few differ considerably in their action upon plant life. While, to quote some examples, certain compounds of copper, zinc, and arsenic are exceedingly poisonous, compounds of manganese and boron are far less deleterious, so that a plant can withstand the presence of far more of the latter substances than of the former. The tested compounds of copper, zinc, and arsenic do not seem to stimulate growth, even when they are applied in the smallest quantities, whereas very dilute solutions of manganese and boron compounds decidedly increase growth. A differentiation, however, is shown even in this stimulative action, for while manganese is the more effective in stimulating barley, boric acid is far more potent for peas, the shoots being particularly improved. The minute quantity of manganese sufficient to produce stimulation is very remarkable, since 1 part of the sulphate in 100 millions was found to exercise a beneficial action. The yields were increased in some experiments by as much as 41 per cent. in the case of spinach, 19·4 per cent. in the case of peas, 13·9 per cent. in the case of flax, and 5·3 per cent. in the case of barley. In some investigations carried out with rice in Japan the harvest of grains was increased by one-third owing to careful manganese

[1] Inorganic Plant Poisons and Stimulants. By Winifred E. Brenchley, D.Sc., F.L.S. Cambridge University Press.

stimulation. This stimulation is assumed to be due by some observers to an increase in the oxidising powers of the oxidising enzymes, so that destruction of the hindering compounds can be accomplished as quickly as they are formed, growth thus continuing more rapidly. Manganese possibly intervenes as a catalytic agent in the material changes of which plants are the seat, and the metal thus participates in an indirect manner in the building up of the tissues and in the production of organic matter. And this great accelerated synthetic result is the outcome of an application of a solution containing 1 part of the salt in 100 million parts.

In considering the experimental work that has so far been done on the subject of poisoning and stimulation Dr. BRENCHLEY concludes that it is not true to maintain the hypothesis which some have done that all inorganic plant poisons act as stimulants when they are present in very small quantities, for while some poisons do increase plant growth under such conditions others fail to do so in any circumstances. It is more probable that some inorganic poisons act as stimulants when present in small amounts, the stimulating concentrations varying both with the poisons used and the plants on which they act. The researches on this subject have attracted considerable attention, and their development will be watched with the keenest interest. The particular work on agricultural applications apart, it is obvious that as these investigations are pursued they may help to clear up much of the obscurity which surrounds the remarkable action of small entities in the human body.

Annotations.

"Ne quid nimis."

FAMILY RESEMBLANCES.

HAD the "Slingsby Case" been tried in less stirring times it certainly would have attracted a greater share of public attention, particularly from those who are interested in the inheritance of physical characters. Mr. Justice Bargrave Deane recognised a close degree of resemblance between the boy defendant and his father, Mr. Charles Slingsby, particularly in the case of the lower jaw; Sir George Frampton detected a likeness between the ears of the boy and his mother. On the day on which the learned judge gave his judgment a well-known anthropologist, an anatomist famous for his accuracy, descended in a lift with two men and a boy, all three of whom stared stolidly at the advertisements on the wall. One of the men was short and dark, the other fair and of medium height. The expert at once assigned the little boy as son to the fair man from their close resemblance. As the lift gates swung open the boy took the dark man by the hand, called him "dad," while the fair man went his own separate way. In telling us his experience he adds: "Another case of mis-identification came under my notice on the evening of the same day. An intelligent and experienced lady called on a friend who took her up to the nursery to see the latest born. The visitor found two nurses and two babies, and exclaimed, 'Well, I need not ask which it is; this one is your image.' She then selected the wrong child." From such cases one must conclude that general resemblances may prove misleading. But it is otherwise with particular features, such as the Hapsburg lip. Medical men are well aware of such features; a nose, an eye, or an ear may have such a pronounced shape that a family identification may be made with certainty. Individuals with pronounced features are in the minority. There is no question that such features may be and are inherited. In many instances the characteristic form is not apparent in the young; it becomes fully developed after adolescence, and this is especially true in the case of the nose, and is also the case with the lower jaw. The boy defendant is 4 years of age; in the next 16 years his jaw will be remodelled over and over again to make room for the permanent molar teeth, the teeth which will replace his milk set, and to fit the growth of the upper jaw; it would be at maturity we should expect a real, not an apparent, resemblance of the paternal form of jaw to appear. The ear offers a more certain means of identification of likeness, but very few men have studied this complex structure so closely as to be in a position to offer an expert opinion as to degree of likeness. In the photographs which have been published of the parties in the Slingby case an expert has little difficulty in recognising what was apparently regarded as a striking feature of the "Slingsby" ear. The resemblance lies in the degree to which the hinder border of the ear is folded over so as to form a welt. It is well known that the folding of the ear margin is a result of retrogression; the more the border is folded over the greater is the degree of developmental retrogression. There is no folding of the border of the ear in the more primitive apes; in some of the higher apes, especially in the orang, there is a high degree of infolding, for the ear of the orang is more retrograde than that of most human races. A considerable degree of infolding of the ear is so common that an anthropologist would give it only a slight value in working out resemblances. Sir George Frampton's method of observation we do not know, but we must admit that sculptors have certainly a right to express an opinion. It was Thomas Woolner who drew Darwin's attention to the presence of a nodule on the welt of the human ear which the great evolutionist recognised as a remnant of the ancient pointed tip. That all parties concerned in the Slingsby case should show a trace of the ancient tip is not a matter for surprise; the ear is exceptional which shows no sign of this ancient mark.

MEDICAL RECIPROCITY WITH BELGIUM.

THE Executive Committee of the General Medical Council at its last meeting on Jan. 22nd had before it the recent Order in Council extending Part II. of the Medical Act of 1886 to the kingdom of Belgium.[1] The committee considered evidence submitted to it by Belgian professors, graduates, and others with regard to the course of study and examinations which candidates had to undergo in order to obtain the degree of Doctor of Medicine in the universities of Belgium and the legal authorisation

[1] THE LANCET, Jan. 16th, 1915, p. 143.

to practise in that country. The committee was satisfied with the evidence produced, and resolved as follows:—

That so long as the Order in Council of Jan. 7th, 1915, remains in force any person who produces evidence satisfactory to the Registrar that he has obtained the degree of Doctor of Medicine in the Belgian universities of Brussels, Ghent, Liége, and Louvain, and is legally authorised to practise medicine, surgery, and midwifery in Belgium; and who satisfies the Registrar as to the other particulars specified in Section 12 of Part II. of the Medical Act, 1886, shall be entitled to be registered in the Foreign List of the Medical Register.

Further communications received by the Registrar of the General Medical Council, through the clerk of the Privy Council and His Majesty's Minister at Havre, from the Belgian Government, afford official confirmation of the evidence placed before the Executive Committee as to the education and examinations on which medical qualifications are conferred by Belgian universities and colleges. The Acting Minister of the Interior, in the course of his note to Sir Francis Villiers, used the following appreciative words: "Veuillez croire, Excellence, que le Gouvernement Belge est très sensible à cette nouvelle marque de la sympathie de l'Angleterre et qu'il en remercie vivement les autorités de votre pays." In the absence of complete information on Jan. 22nd, the question of the recognition of Belgian dental diplomas was held over until the next meeting of the Executive Committee.

THE HUMAN STOMACH AND THE CANALIS GASTRICUS.

IT has been commonly supposed that fluids and solids on being swallowed must necessarily be mixed up in the stomach, but there is now much important evidence to show that such a view must be revised. It is held that fluids can be swallowed, in fact usually are swallowed, and yet not mix with other ingesta within the lumen of the stomach; they pass on, by the aid of a special arrangement to be immediately noted, direct from the cardiac orifice to the pylorus. Comparative anatomy has shown that such an arrangement holds good for ruminants, and at a later time it was discovered that carnivora possess the same faculty, despite the fact that in them the stomach is a single chamber. Recently Dr. F. T. Lewis has called attention to a canal along the lesser curvature of the human fœtal stomach; he has called it the "canalis gastricus." He says "it suggests a continuation of the œsophagus ..... and may become a tube during its physiological activity, by the approximation of its lips." Some recent radiographic and anatomical researches by Dr. Geoffrey Jefferson in the *Journal of Anatomy and Physiology* (1915, vol. xlix., p. 165) give further strong support to the likelihood of some action such as this persisting in adults and realising in this way a selective course to the pylorus for fluids. Screen examinations of 22 normal people after being given a mixture of bismuth oxychloride and milk of the consistency of thin cream showed that in 18 instances the fluid was confined to the lesser curvature; in the other 4 cases it spread rapidly over the sides of the stomach, but these stomachs were atonic. That such a course does not merely represent the shortest path gravity would demand is shown by the holding up of some portion just below the cardiac orifice. Nor does Dr. Jefferson agree wholly with Dr. Hertz that the normal empty stomach is contracted down like a piece of small intestine, the localised stream being accounted for in this way. That the stomach really makes a coördinated effort to direct the fluid into a channel at its lesser curvature is thus suggested by X rays. Finally, there must be recognised the active part played by the oblique muscle of the stomach in accomplishing this local canalisation. It is probably by the contraction of its upper fibres that the bismuth, as seen by the screen, was so constantly held up below the cardiac orifice. This sheath of muscle, in fact, is of more importance than was supposed, and its action aids in forming this functional "canalis gastricus." Further proof of the specialisation of the lesser curvature of the pars cardiaca for some function other than that of slowly pressing the food out into the outer pyloric part is shown by the marked difference in the action of the muscle along the lesser curvature as seen by X rays, the change occurring at the incisura angularis. The whole diameter of the pars pylorica takes part in active peristaltic waves coursing towards the pylorus. It is, however, very rare to see any indentation of the lesser curvature in the pars cardiaca. There thus seems to be a fundamental functional difference between the two parts, which gains its best explanation from the facts above discussed.

SMALL-POX, VARICELLA, AND "ALASTRIM."

THE discussion at the Royal Society of Medicine[1] arising out of a paper read by Dr. W. G. Armstrong on the subject of the epidemic of small-pox at Sydney in 1913 was in many respects interesting and suggestive. The peculiar feature of the epidemic in question was the mildness of the symptoms, although the population affected was largely unvaccinated. Thus, in many instances there were but few cutaneous lesions, while in a patient who presented a severe confluent eruption on the face and extremities the constitutional disturbance was so slight that the man's complaint was only of the insufficient food given him and of the soreness of his feet if he tried to stand on them. There was only one death among over 1000 cases of the disease. Coincidently with this epidemic of small-pox there was an increase in the prevalence of varicella, but the behaviour of the two diseases with regard to vaccination negatived any possibility of the epidemic being of hybrid character. Epidemics of specially mild small-pox have been observed in many parts of the world and have received different names, such as milk-pox, Cuban itch, Spanish measles, and "alastrim"; and doubt has prevailed as to the identity of these mild forms with true variola. Dr. C. J. Martin quoted a report by Ribas, of São Paulo, who upheld the diversity of the local disease known in Brazil as "alastrim" from small-pox owing to its low mortality, its trivial degree of constitutional disturbance, the absence of the characteristic smell, and the possibility of successfully vaccinating patients within a short period after the attack. On the whole, the evidence is in favour of regarding all these conditions as mild variola, and the success of Dr. J. Burton Cleland and Dr. E. W. Ferguson in inoculating calves with material derived from patients in the Sydney epidemic affords powerful support to this view. Dr. Martin, however, suggests that the three diseases—small-pox, chicken-pox, and "alastrim"—are of common parentage but have become so far differentiated as to breed true at the present time.

[1] Proceedings of the Royal Society of Medicine, December, 1914, Section of Epidemiology.

REMUNERATION ON THE PANELS.

IT is fairly evident that if there had been no war there would have been a considerable amount of disappointment and resentment felt by medical men on the panels of many districts owing to their receiving as their remuneration for 1914 less than they had reason to expect, and owing to their only receiving the balances acknowledged to be due by the committees after appreciable delay. In the present circumstances the war is responsible for an increase in the difficulty of the position owing to the number of insured persons who have enlisted. There are no contributions made by them or on their behalf by their employers, and owing to the drain upon clerical staffs everywhere arrears of work have accumulated, with general dislocation of business. It is too early to say what may be done in the future in order to relieve the situation, but it seems very doubtful whether committees can be compelled to find money and make payments where the ordinary working of the Insurance Act does not provide it. At the same time the hardship to the medical profession and to the druggists must be great when payments which they have had every right to expect are postponed or withheld. The medical practitioners have had to arrange the organisation of their professional work to meet the demands of their insured patients upon their time and attention, and the druggists have had to meet anticipated requirements by laying in stocks of drugs which have to be paid for. Both have to contemplate the return of many insured persons serving in the army with wounds or with impaired health, and a general alteration of the probabilities with regard to their need for medical care. For the rectification of some part at any rate of legitimate causes of complaint it may be necessary to wait until the war is over and legislation can proceed upon more normal lines than now. At present it may be urged on behalf of the medical men affected that they are entitled to demand payment upon all patients on their lists until they have been notified as provided for by Regulation 29, and that if the financial provisions of the Insurance Act do not meet the needs created by war, legislation should supply the deficit.

THE ADMINISTRATION OF THE PHARMACY ACTS.

THE annual report of the Registrar of the Pharmaceutical Society, which was presented to the council at the February meeting, shows that as regards membership the steady progress which has been revealed by these reports during the last ten years or more is well maintained. The number of members is now well over 8000, which is about half the number of registered persons; the majority of the non-members no doubt consist of qualified chemists who are not yet in business on their own account. There is also an increase in the number of names on the Pharmaceutical Register, and although this increase is only slight it is satisfactory to know there is an increase, while the fact that there has been a considerable accession to the ranks of the registered students is very promising. From the general point of view the most interesting part of the report is that which deals with the administration of the penal clauses of the Pharmacy Acts. The number of cases of alleged infringement that require investigation is still large, but smaller than it was during the previous year. During 1914 1113 cases were investigated, and in 239 cases proceedings were instituted, and the council was successful in all but one or two. The list of offenders is headed by unqualified drug store proprietors, of whom 93 were proceeded against, the offence generally being that of keeping open shop for the sale of poisons. Among the persons by whom penalties were paid there were also a number of qualified pharmacists who had committed one or other of the irregularities which are offences under the law regulating the sale of poisons. The list of offenders also includes unqualified assistants in drug stores, unqualified managers and assistants to chemists, executors to chemists, limited companies trading as chemists and druggists, unqualified directors of limited companies, grocers, herbalists, general storekeepers, and one ironmonger, one seedsman, one oilman, one manure agent, and one unqualified assistant to a doctor. It is evident from the variety of the occupations of the persons proceeded against that the task of preventing the irregular sale of poisons is no light one. In five cases of alleged infringement of the Pharmacy Acts which had been reported it was found upon analysis that the poison asked for had been omitted from the articles purchased, and proceedings could not, therefore, be taken under these Acts; but pursuing the policy decided upon some years ago the council proceeded in two of these cases under the Merchandise Marks Acts, and the defendants were convicted for selling goods to which a false trade description was applied.

THE STREPTOCOCCUS VIRIDANS IN INFECTIONS OF THE UPPER RESPIRATORY TRACT.

AN interesting paper is published in the *Archives of Internal Medicine* for Jan. 15th by Dr. Russell L. Cecil, of New York. He adopts the classification of streptococci put forward by Schottmueller, based on the appearances of the colonies on blood-agar —namely, S. hæmolyticus (longus, pyogenes), S. viridans (mitior), and S. mucosus. Dr. Cecil states it to have been found by many investigators that clinically the S. hæmolyticus produces suppurative or phlegmonous inflammations, while the S. viridans usually leads to catarrhal processes. His own work has been specially devoted to determining the part played by the latter organism in infections of the upper respiratory tract. From the study of 89 cases of such infections he found the S. viridans to be the predominant organism in 50 cases, or 56·2 per cent. In general these infections were characterised by a mild course and a tendency to chronicity with frequent recurrences, which he attributes to the short duration of the acquired immunity. These infections of the upper respiratory tract due to S. viridans, especially those of the tonsils, sinuses, and the tooth sockets, are frequently associated with endocarditis and arthritis, and he is of opinion that there is a good deal of evidence that the latter conditions are secondary to the former. He has found autogenous vaccines to be of considerable value in cases where the structural changes are not too advanced, but he takes care to point out that in cases of bronchitis with emphysema or bronchiectasis, old sinus infections with thickened walls, and advanced pyorrhœa with retraction of the gums, vaccines can bestow only limited benefits. He believes that vaccines are more especially

valuable in the prevention of recurrences, and suggests that prophylactic vaccination against infections of the upper respiratory tract deserves more attention. He states that his own experience indicates that most persons who suffer from frequent colds are susceptible to one particular organism with which they are constantly being reinfected. Dr. Cecil's paper is an interesting and practical contribution to a subject of general interest.

ON Wednesday next, Feb. 17th, at 5 P.M., before the Historical Section of the Royal Society of Medicine, Sir Alexander Simpson, of Edinburgh, will read a paper on Jean Astruc (1684–1766), of the Montpellier School, the historian of syphilis, but nowadays more famous in theological circles as the founder of the higher biblical criticism. This is the aspect which will be specially considered, we understand, by Sir Alexander Simpson.

THE Morison lectures will be delivered before the Royal College of Physicians of Edinburgh by Dr. W. H. B. Stoddart within the hall of the College, 9, Queen-street, Edinburgh, on Monday, Wednesday, and Friday, March 8th, 10th, and 12th, commencing each day at 5 o'clock P.M. The subject of the lectures will be the New Psychiatry.

THE annual meeting of the British Medical Association, which was to have been held at Cambridge this summer, will not take place. The statutory annual general meeting of the Association and the annual meeting of Representatives will, however, be held.

MEDICINE AND THE LAW.

Medical Certificates and the Education Authorities.

AT the Bangor police court recently a summons taken out by the education authority against Ernest Kenrick, the father of a boy who had been kept back from school on the ground of ill-health, was dismissed by the bench after hearing the evidence of Mr. Helsby, the boy's medical attendant. Mr. Helsby stated that in his opinion the boy was too delicate to attend school, and he had advised that he should be kept at home during the winter. He had given no certificate because he did not think that the education authority could compel parents to obtain and pay for medical certificates in such circumstances, and he knew that the authority did not pay for them. In other districts where the education authority paid for certificates he had given them. He was always willing to give the required information to school attendance officers. The clerk to the magistrates advised the bench that it was doubtful whether the education authority had any right to put parents to the expense of obtaining medical certificates, especially as the attendance officers could always call upon the medical men. He advised the magistrates that they had no option but to dismiss the case. Mr. Helsby explained that he might spend a great deal of time in writing certificates which the majority of parents could not afford to pay for, and that he attended the court in order to maintain his position on the question of principle. He is to be congratulated upon having done so with complete success, and it is to be noted that his conduct in the matter was not only legally correct but reasonable and conciliatory, as he was willing to give verbal information to the attendance officer. Presumably that official would not find it necessary to call upon the medical man in all cases where illness was alleged as a ground for failure on the part of a pupil to attend school, but would satisfy himself as to the fact of illness by a visit to the child's home. Otherwise the tax of personal answer to inquiries would fall as heavily upon the medical man as that of signing certificates without remuneration. It would be fairer and more businesslike if all education authorities adopted a uniform practice of requiring and paying for certificates in cases where any uncertainty indicates that they are desirable.

Prescription by Telephone.

At an inquest at Burton-on-Trent lately it was proved that death had been caused by the error of a dispenser to whom the medical man attending the deceased had telephoned, instructing him to send a solution of a certain drug containing 1/75th of a grain for hypodermic injection. In taking down the message the dispenser mistook 1/75 for 0·75, and adopted the latter figure in preparing the solution, with the result recorded. The mistake should be noted, as all of us who use the telephone are familiar with the mistakes made in telephoning with regard to figures, even when the listener is a practised operator.

A Pernicious Quack Sentenced.

Arthur Denison Light, described as principal of the British Health Institute and publisher of a periodical called "Power, Purity, and Progress," was sentenced to three months' imprisonment at the Old Bailey recently upon a charge of attempting to obtain money by false pretences. Light, against whom *Truth* had frequently warned the public, pretended to treat diseases of the sexual organs and sold books and appliances of the character usual with such gentry. One of Light's ingenious devices was to offer to make examinations of urine free of charge. He was met here by the ingenuity of a detective, Inspector Wagstaff, who submitted an example consisting of cold tea and soap, and was informed that the patient supposed to have passed it was suffering from catarrh of the bladder. Inspector Wagstaff and a Mr. Leader, a member of a young men's association called the "Alliance of Honour," who got into communication with the prisoner and placed the correspondence in the hands of the police, are to be congratulated upon having secured for him a sentence which, if inadequate, will serve as a warning to him and others.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next meeting of this association will be held at 11, Chandos-street, Cavendish-square, London, W., at 3.15 P.M., on Thursday next, Feb. 18th, under the presidency of Dr. David G. Thomson. A paper will be read on Meningo-Vascular Syphilis by Dr. Roy M. Stewart, with lantern demonstration. There will be no quarterly dinner.

LITERARY INTELLIGENCE.—Messrs. Smith, Elder, and Co. announce for publication, under the title of "The Minor Horrors of War," a number of articles which have appeared since the beginning of the war in the *British Medical Journal* by Professor A. E. Shipley, the Master of Christ's College, Cambridge. These articles deal with various insect and other pests which cause disgust, discomfort, and often disease amongst our troops now fighting in all quarters of the globe.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

COMMITTEE FOR THE INVESTIGATION OF ATMOSPHERIC POLLUTION:

Summary of Reports for Month ending Nov. 30th, 1914.

1	2	3	4	5	6	7	8	9	10	11	12
			Metric tons of deposit per square kilometre during month.								
			Insoluble matter.			Soluble matter.			Included in soluble matter.		
Place.	Correspondent.	Rainfall in millimetres.	Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphate as (SO_4).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND—											
Birmingham, Central ...	Dr. J. Robertson, M.O.H.	86	0·11	4·17	10·05	1·47	6·30	22·10	3·66	0·52	0·05
,, Aston	,,	79	0·04	1·44	3·58	0·56	4·28	9·90	2·15	0 56	0·04
,, S.W.	,,	78	0·02	0 65	1·34	0·47	2·35	4·83	0·96	0 43	0 03
Bolton	Dr. J. E. Gould, M.O.H.	156	0·10	1·77	3·89	7·12	14·25	27·13	8·46	2·63	0·14
Exeter	Mr. F. Southerden.	81	0·03	1·21	2·12	1·94	3 75	9 06	1 67	0·65	0·04
Kingston-upon-Hull	Mr. A. R. Tankard, Public Analyst.	55	0·05	2·05	2·94	1·10	3·91	10·05	2·33	0·60	0·05
Liverpool	Dr. E. W. Hope, M.O.H.	79	0·24	3·22	6·85	3·15	4·41	17·87	3·57	1·34	0·21
London—											
Meteorological Office ...	Director, THE LANCET Laboratory.	74	0·14	1·63	4·29	3·89	5 36	15·30	2·98	1·21	0·11
Embankment Gardens ...	Mr. J. Ollis, Chief Officer, Public Control Department, L.C.C.	64	0·21	2·84	5·84	2·55	3·95	15·40	2·73	0·79	0·10
Finsbury Park...	,,	40	0·14	2·58	5·21	1·85	3·79	13·59	1·57	0·37	0·03
Ravenscourt Park	,,	51	0·10	1·13	2·84	1·01	2·73	7·81	1·33	0·39	0·07
Southwark Park	,,	69	0·06	2·86	5·17	1·51	5·77	15·37	2·99	0·63	0·08
Wandsworth Common ...	,,	42	0·08	0·36	1·04	0·41	2·57	4·49	1·37	0·29	0 02
Victoria Park	,,	42	0·04	0·92	1·76	1·25	4·49	8·46	2·65	0·31	0·04
Golden Lane	Dr. W. J. Howarth, M.O H	74	0·07	3·78	4·67	2·06	5·59	15·67	3·67	0·89	0·16
Malvern	Mr. W. Osborne Thorpe, Engineer U.D.C.	61	0 01	0·18	0·27	0·95	0·97	2·38	0·53	0·36	0·01
Manchester*—											
School of Technology ...	Mr. J. Warrington, Secretary, Air Pollution Advisory Board.	91	0·14	3·69	6·16	1·27	6·40	17·66	3·77	1·38	0·10
University...	,,	86	0·13	3·01	6·82	1·62	5·82	17·40	3·17	1·25	0·09
Newcastle-on-Tyne	Dr. H. Kerr, M.O.H.	82	0·19	4·22	6·81	2·46	5·08	18·77	3·00	0·67	0·21
Oldham	Dr. J. B. Wilkinson, M.O.H.	112	0·26	6·55	14·60	2·68	7·60	31·70	4·36	0·79	1·84
Sheffield—											
Attercliffe Burial Ground	Prof. W. P. Wynne, The University.	72	0·12	4·01	9·36	1·80	7·61	22·90	3·59	1·74	0·05
Hillsborough Park	,,	91	0·06	1·44	4·86	1·17	4·90	12·43	2·66	1·08	0·03
Meersbrook Park	,,	78	0·05	1·18	3·13	0·75	5·48	10·59	2·32	1·00	0·04
Weston Park	,,	87	0·11	2·04	5·77	1·60	4·51	14·03	2·39	0·97	0·03
York...	Dr. R. M. Smith, M.O.H.	70	0·13	1·92	3·03	1·68	3·64	10·41	2·10	0·67	0·50
SCOTLAND—											
Coatbridge	Mr. A. G. Dutch, Chief Sanitary Inspector.	107	0·14	2·33	5·54	1·15	2·14	11·30	1·39	0·33	0·10
Greenock	Mr. J. Devine, Sanitary Inspector.	118	0·09	1·58	2·37	1·50	3·81	9·36	1·69	0·89	0·14
Leith	Mr. Thomas Bishop, Sanitary Inspector.	55	0·07	1·88	4·47	2·83	1·41	10·66	1·65	0·48	0·32
Paisley	Mr. W. W. Kelso, Sanitary Inspector.	137	0·33	4·97	7·10	6·05	5·50	23·95	2·03	1·23	0·14

* Other Manchester records lost by bursting of bottles by frost.

Col. 4 includes all matter insoluble in water but soluble in CS_2. Col. 5 includes all combustible matter insoluble in water and in CS_2. Col. 6 includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) one gramme per sq. metre; (*d*) 1/1000 millimetre of rainfall (see Col. 3).

The analytical work involved in the above return was undertaken respectively by J. F. Liverseege, F.I.C., Birmingham; Harry Hurst, B.Sc., F.I.C., Bolton; F. Southerden, B.Sc., F.I.C., Exeter; A. R. Tankard, F.I.C., Kingston-upon-Hull; W. H. Roberts, M.Sc., F.I.C., Liverpool; S. A. Vasey, F.I.C., Director, THE LANCET Laboratory (London Meteorological Office collections); J. H. Coste, F.I.C. (Embankment Gardens, Finsbury Park, Ravenscourt Park, Southwark Park, Wandsworth Common, Victoria Park collections), London; F. L. Teed, D.Sc., Golden-lane, London, E.C.; C. C. Duncan, F.I.C., Malvern; E. Knecht. Ph.D., M.Sc., Cheadle Davyhulme, Fallowfield, School of Technology, University, Whitefield (Manchester collections); J. J. Dunn, D.Sc., Newcastle-on-Tyne; Professor W. P. Wynne, Attercliffe Burial Ground, Hillsborough Park, Meersbrook Park, Weston Park (Sheffield collections); S. H. Davies, M.Sc., York; J. W. Biggart, F.I.C., Greenock; A. Scott Dodd, B.Sc., F.I.C., and R. M. Clark, B.Sc., Leith and Paisley respectively; Messrs. R. R. Tatlock and Thomson, Coatbridge. The correspondents referred to in col. 2 are for the most part public health authorities.

THE CORNWALL COUNTY ANALYST AND PRESERVATIVES IN FOOD.—At the last meeting of the General Purposes Committee of the Cornwall County Council the county analyst (Dr. Kitts) reported that during the past four years slightly over 1 per cent. of the milks had been treated with a preservative and 5 per cent. of the butter samples. In margarine 95 per cent. of the specimens examined had contained a boric compound in small quantities. Dr. Kitts stated that when preservatives had been used in other articles of diet the user had sometimes not even known the name of the powder he had used, to say nothing of its possible physiological effects; the vendors persuaded the users that the substances were perfectly harmless. Dr. Kitts added that it was outrageous that the public should be constantly dosed with "medicinal substances" by persons having no knowledge of their proper use or effects upon the human system.

BRISTOL INSURANCE COMMITTEE.—At the last meeting of this committee it was reported that the total number of persons on the "doctors' lists" was now 106,704, an increase of 7000 upon the previous year. The number of prescriptions dispensed during 1914 was 382,000, a rate of over 1000 a day.

SCARLET FEVER IN BELFAST.—The attempt to limit the spread of scarlet fever in Belfast by closing the public schools last Christmas has not succeeded. During the week ended Jan. 16th there were 41 notifications of the disease, as compared with 37 in the previous week, while in the week ended Jan. 23rd 55 cases were notified. Indeed, there seems to be a recrudescence of the epidemic, which has now prevailed so many years in Belfast. In the progress of preventive medicine the inability to restrict scarlet fever is the most striking exception.

MEDICAL PRACTICE ON THE EAST COAST: THE POSITION AT GREAT YARMOUTH.

(BY OUR SPECIAL COMMISSIONER.)

Great Yarmouth, Feb. 8th.

To counterbalance the inevitable economical pressure felt by a nation at war we have generally some communities more thriving than others, because they can provide some of the varied material—ships, guns, weapons, clothes—needed for the prosecution of hostilities; other localities receiving no such set-off will necessarily suffer as more and more money is consumed. Prominent among the English towns which have to bear the burden of war time stands Great Yarmouth, which has been attacked directly and twice by the enemy, and suffers indirectly by the collapse of its main sources of income. Fortunately, the first attack, a bombardment, did no harm. Presumably the German ships mistook the distance, for all their shells fell short of the town. This first attack occurred, it will be remembered, at the beginning of November, and its memory was fading away when on the night of Jan. 19th airships hovered over the town dropping bombs—this time with fatal effect in that several lives were lost, but no great destruction of buildings occurred. Financially speaking, rumour did vastly more harm to Yarmouth than the German bombs.

The netting of fish and the letting of lodgings are the principal sources of income at Yarmouth, and the war has dealt hardly with both. A considerable proportion of the inhabitants rent houses with the intention to secure lodgers for a part of them, and render themselves liable to pay rent and rates far and away above what they would pay in either direction for their personal use. Of course, they count on making up the difference advantageously by letting rooms or by taking in boarders. The season at Yarmouth is very short; it reaches its climax in September and was commencing at the end of July. War was declared on Tuesday, August 4th. Of the visitors who were already at Yarmouth hardly any remained beyond the end of that week and none came to take their place the following week. Gradually braver spirits returned, but the town never recovered its holiday population as some more fortunate watering places further south appear to have done. Perhaps, if there had been fewer sinister rumours floating about, the season might not have been so completely spoilt, but every parent who looked at an atlas recognised that if attack was possible Yarmouth was a very vulnerable spot, and decided not to venture there with children. Mere digging of trenches would not have frightened the public away from Yarmouth any more than it did from Broadstairs. But being nearly opposite the German naval base, it was but too correct to conclude that Yarmouth would be attacked, if attack became feasible, while experts were aware of the possibility of a dash from fast enemy cruisers. Therefore, those who, in spite of the war, were not disposed to forego their seaside holiday selected some place that seemed less exposed than Yarmouth.

The Effect on the Local Industries.

The next source of income in Yarmouth is the fishing industry, especially the herring trade. This gives employment to a large number of fishermen, and also to regiments of Scotch women, who follow the fishing smacks along the coast to clean and pack the herrings. They arrive just after the sea-bathing season concludes, and in the South Side, near the fish-docks fill the lodgings abandoned by the holiday folks. But as most of the herrings are packed in barrels, preserved in brine, and exported to the North Sea and Baltic ports this trade is paralysed by the war. It so happens that the herring women have found during the collapse of their trade a valuable method of earning money. Exposed to all weathers, they know how to knit themselves warm woollen underclothing. To-day they can find employment knitting clothes for the soldiers at the front; but they do this at home in Scotland, not at Yarmouth. The poorer lodging-house keepers, those, for instance, who used to receive the women employed in fish-cleaning, are doing very well in billeting soldiers. On their side the soldiers are more comfortable than usual; for being housed by lodging-house keepers the cooking and attendance generally are better than in private families which do not make a business of receiving strangers.

The Prosperous Inhabitants Suffer Most.

The lodging-house keepers, however, who are able to balance the loss of their ordinary business by attending to soldiers do not belong to the class which best pays its medical attendants. The central and richer part of the town suffers most, and its inhabitants are not likely to ask for help. Employees of different sorts in commercial spheres provided modest payments for board and lodging during the winter months on condition that they retired to small rooms during the summer holiday rush. Last year there was no summer rush, and many of these winter clients have enlisted. The health authorities, I found, do not think there is as much poverty as usual among the labouring class and those sections of the community who in normal times suffer most. But other sections who, as a rule, do not suffer at all are badly hit, and they are the best ratepayers and the medical practitioners' principal source of income. The municipal authorities are greatly concerned, for they do not like to prosecute good citizens. The medical practitioner feels the same compunction about pressing for his fees. Thus one medical practitioner told me that a patient could not pay what she owed him because her lodger owed her £18, and the lodger could not pay because his occupation had practically ceased at the outbreak of war. Then those connected with the law have little or nothing to do. No one is going to institute legal proceedings while the war lasts. Jewellers, tailors, dressmakers all suffer. The war is a good reason for wearing out all the old clothes. Persons who have private means cannot realise their investments, and those who have placed money in German or Austrian enterprises may never see any of it again. Tradespeople who deal in objects that are not absolutely necessary do very little trade, and it will be seen that these are just the very classes among whom medical practitioners find their best paying patients. Even those who have money feel unsafe and think it more prudent to economise. Therefore, they only send for their doctor when it is absolutely necessary. Or, worse still, they profit by the fact that they have the means to leave the town altogether, though this is not the general rule.

The personal economy and the cessation of trade in certain directions could of course be paralleled all over the country, but in Yarmouth the depression is accentuated by the collapse of the two great industries.

Vast Gratuitous Medical Attendance.

The poorer sections of the community are, if anything, better off than before the war. The labourers readily find employment, while many of them have enlisted, and there is a good deal to do for those who remain. But the abolition of the militia by the establishment of the Special Reserve has been a great loss to the town of Yarmouth. The Norfolk Militia was almost a crack regiment. His late Majesty, Edward VII., was their colonel, and he used to come down to Yarmouth to review them, thus bringing much money to the town. Many of the old militiamen accepted a small fee to become reservists. From the town of Yarmouth alone, out of its 57,000 inhabitants, no less than 500 were called to the flag as reservists. A large proportion, not only of these reservists but of those who enlisted since the beginning of the war, were insured persons, but their wives and children were paying patients. Now this important source of income is lost to the profession, for the wives and children of those with the Flag are being attended in the main gatuitously.

The Dependents of the Soldiers.

Yielding to a generous and patriotic impulse, practically all the practitioners at Yarmouth agreed to attend gratuitously the dependents of those who enlisted. The chemists, on their side, offered not to charge for the work of dispensing the drugs, and the Prince of Wales's Relief Fund was looked to to reimburse the bare cost of the drugs consumed. But quite a large proportion of these dependents are better off than they were before the outbreak of war. The allowance they get from the War Office is in many cases higher than what their husbands could afford to give before they enlisted, and yet in those days they had to pay for medical attendance. Now the dependents can claim the services not only of the panel but of the non-panel doctors, and neither chemist nor doctor receives any remuneration. The Yarmouth practitioners are beginning to wonder why dependents who are, generally speaking, better off than they were formerly

should come upon them for gratuitous advice. This is all the harder to bear as so many patients who used to give reasonable fees are now so impoverished that they really cannot pay anything. There is as much, indeed more work to be done, but much less to receive than formerly. Thus I called on a non-panel doctor who I found had been kept from his dinner by nine army dependents. After giving them gratuitous advice a tenth visitor came, but instead of a paying patient he proved to be the water-rate collector.

After-effects of the Air Bombs.

It may not, perhaps, be generally realised that the airship bombs have materially increased the amount of work falling upon the medical practitioners. It is not the casualties that count: two killed, three wounded, and minor injuries make but little difference in the total number of patients ill from all causes. But there has been a great amount of illness and some deaths among those who were not struck. People with weak hearts, startled by the noise and alarm, had violent attacks of palpitation, and several of the deaths a few days after the bombardment were due to the shock. Then there are the highly nervous or neurotic persons One case was that of a woman who could not be induced to sit still but was constantly springing to her feet, pacing up and down the room, wondering what she would do if Zeppelins dropped more bombs. In another patient the pulse, previously normal, continued beating at 105 per minute a fortnight after the explosions. These certainly did make a very great noise, and being absolutely unexpected were all the more startling. Now that the people are a little more accustomed to such aggression, it is probable that another attack would occasion much less disturbance. Nevertheless, the emotion they cause must seriously affect persons with weak hearts or highly nervous temperaments.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned has been granted a temporary commission as Surgeon in His Majesty's Fleet: Arthur Ernest Iles.

The following appointments have been notified:—Staff-Surgeon: B. R. Bickford to the *Pembroke*, additional. Temporary Surgeons: G. M. Oakden to the *Prince George*; D. R. Bedell-Sivright and G. S. Aspinall to the *Victory*, additional, for Haslar Hospital; W. B. Cunningham and W. L. Glegg to the *Pembroke*, additional, for Chatham Hospital, all as additional medical officers; A. G. Stewart and D. S. MacKnight to the *Vivid*, additional, for disposal.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon: W. H. Bleaden to the *Pembroke*, additional.

ARMY MEDICAL SERVICE.

Colonel John C. Culling is retained on the Active List under the provisions of Article 120, Royal Warrant for Pay and Promotion, 1913, and to be supernumerary (dated Feb. 7th).

ROYAL ARMY MEDICAL CORPS.

Brevet-Colonel Frederick Smith, D.S.O., is retained on the Active List under Article 120, Royal Warrant for Pay and Promotion, and to be Supernumerary (dated Feb. 8th).

The undermentioned are granted temporary rank as follows:—To be Lieutenant-Colonel: Dated Jan. 19th: Robert Thomson Leiper. To be Lieutenants: Dated Jan. 19th: Reginald Percy Cockin and John Gordon Thomson.

The undermentioned relinquish their temporary commissions with the Allied Forces Base Hospital:—Dated Feb. 1st: Major Arthur G. Whitehorne-Cole, Major Barnard Hudson, Major Philip M. Heath, Captain Ernest D. Roberts, Lieutenant Oswald T. Dinnick, and Lieutenant William M. S. Robinson.

Sydney George Leyland Catchlove to be temporary Captain (dated Jan. 11th).

Lieutenant Gwilym L. Pierce relinquishes his temporary commission (dated Jan. 23rd).

Temporary Lieutenant James G. Ferguson resigns his commission (dated Feb. 4th).

The undermentioned to be temporary Lieutenants:—Dated Jan. 16th: Dominic Francis Curran, John Hastings Glover, William Pritchard-Airey, and James Morrison. Dated Jan. 18th: Herbert William Fankhausen, James Churchill Dunn, Wilfred Conrad Stanley Wood, Donald Watson, Fergus Hay Young, George Allan Maling, Stanislaus Reader, Walter Netherwood Rishworth, Leonard Andersen Pearce Burt, and Samuel Ridley Mackenzie. Dated Jan. 20th: Charles Patrick Valentine MacCormack, Archer Ryland, Charles James Glasson, James Ninian George William McMorris, and Henry William Doll. Dated Jan. 21st: James Tate, Frank Llewellyn Gill, William Alfred Taylor, Charles Birch, Arthur William Hunter Donaldson, Henry Sydney Colchester Hooper, John Frederick Venables, Edward Benjamin Sunderland, Clive Watney Roe, Frank Cyril Greig, John Phillips Blockley, Desmond William Beamish, William Leslie, Robert Walpole Murphy, James Parker, Arthur Poole, Gerald Robinson, Cyril Carlyle Beatty, Patrick Steele, William Armour Brown, Reginald Hannay Fothergill, and Desmond Manus MacManus. Dated Jan. 22nd: William Gerald Ridgway, Robert Aikin Wright, James Hill, Bevil Molesworth Collard, Thomas Joseph Redmond Maguire, and Harold Myrie Cory.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenant Robert Dunlop Goldie to be Captain.

Supplementary to Regular Units or Corps: Royal Army Medical Corps.

The undermentioned Lieutenants are confirmed in their rank: John S. Dockrill, Henry P. Whitworth, Thomas H. S. Bell, Francis A. Duffield, John J. D. La Touche, Joseph H. Baird, John J. Molyneaux, John Stephenson, James Purdie, Clark Nicholson, William S. Wallace, Samuel D. G. McEntire, Gerald G. Alderson, Arthur A. Smalley, Wilfrid B. Wood, Francis A. Roddy, Harold A. Crouch, Herbert S. Milne, John S. Pooley, Quentin V. B. Wallace, William H. Nicholls, Henry Alcock, John Kennedy, and Thomas F. Kennedy.

The undermentioned to be Lieutenants (on probation): Henry Richard Sheppard, Cadet of the Officers Training Corps, and Robert Harvey Williams, ex-Cadet of the Officers Training Corps.

TERRITORIAL FORCE.

Royal Army Medical Corps.

2nd London (City of London) Field Ambulance: Captain (Honorary Lieutenant in the Army) William E. Rielly, from the Territorial Force Reserve, to be Captain.

2nd London (City of London) General Hospital: Maynard Horne to be Captain (temporary). Lieutenant Horace G. L. Haynes, from 2nd North Midland Field Ambulance, to be Lieutenant.

Sanitary Service: Alfred Ernest Williams to be Captain, whose services will be available on mobilisation.

3rd Northern General Hospital: Norton Milner to be Captain, whose services will be available on mobilisation.

1st Southern General Hospital: Robert Beatson Dennis Hird to be Captain, whose services will be available on mobilisation.

South-Eastern Mounted Brigade Field Ambulance: Captain Charles Holt Caldicott, from Attached to Units other than Medical Units, to be Captain. Captain Arthur Lewis Heiser, from Attached to Units other than Medical Units, to be Captain.

2nd Home Counties Field Ambulance: Captain James Dundas, from Sanitary Service, to be Captain. Lieutenant Ernest Mannering Morris, from Attached to Units other than Medical Units, to be Lieutenant.

1st London (City of London) Sanitary Company: Andrew Alexander McWhan to be Lieutenant.

2nd North Midland Field Ambulance: Lieutenant Hubert Pinto-Leite, from the 2nd London (City of London) Field Ambulance, to be Lieutenant.

2nd Lowland Field Ambulance: To be Lieutenants: Stephen Anderson MacPhee and Colin Cameron Philip (late Cadet, Edinburgh University Contingent, Senior Division, Officers Training Corps).

2nd Northumbrian Field Ambulance: William Smith to be Lieutenant.

Attached to Units other than Medical Units.—To be Lieutenants: William Brown and William Alfred Phillipps.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last census, 8680 births and 6995 deaths were registered during the week ended Saturday, Feb. 6th. The annual rate of mortality in these towns, which had been 18·8, 18·0, and 19·2 per 1000 in the three preceding weeks, further rose in the week under notice to 20·1 per 1000 of their aggregate population, estimated at 18,134,239 persons at the middle of 1914. During the first five weeks of the current quarter the mean annual death-rate in these towns averaged 19·1, against 20·0 per 1000 in London. The annual death-rate last week ranged from 10·3 in Ilford, 10·9 in Swindon, 11·8 in Southampton, 12·5 in Edmonton and in Warrington, and 12·9 in Wakefield, to 29·9 in Great Yarmouth, 31·6 in Brighton, 32·5 in Merthyr Tydfil, 35·2 in Stockton-on-Tees, and 40·7 in Cambridge.

The 6995 deaths from all causes were 302 in excess of the number in the previous week, and included 513 which were referred to the principal epidemic diseases, against numbers increasing from 454 to 483 in the three preceding weeks. Of these 513 deaths, 210 resulted from measles, 123 from whooping-cough, 72 from diphtheria, 68 from infantile diarrhœal diseases, 22 from scarlet fever, 17 from enteric fever, and 1 from small-pox. The mean annual death-rate from these diseases was equal to 1·5, against 1·4 per 1000, in each of the two preceding weeks. The deaths attributed to measles, which had been 195, 206, and 191 in the three preceding weeks, rose to 210 last week, and caused the highest annual death-rates of 2·5 in Plymouth, 2·7 in Grimsby, 2·8 in Wigan, 3·1 in Gateshead, 3·5 in Darlington, 3·6 in Cambridge, 4·1 in St. Helens, 4·8 in Rotherham, 6·7 in Merthyr Tydfil, and 9·7 in Stockton-on-Tees. The deaths referred to whooping-cough, which had been 76, 93, and 99 in the three preceding weeks, further rose to 123 last week; the highest recorded rates from this cause were 1·2 in Blackburn, 1·7 in Reading and in Bristol, 1·9 in Rhondda, 2·4 in Sunderland, 3·1 in Gloucester, and 3·7 in Merthyr Tydfil. The fatal cases of diphtheria, which had been 63, 83, and 77 in the three preceding weeks, further fell to 72 last week, and included 16 in London, 4 each in Southampton and Halifax, and 3 each in Tottenham, West Ham, Stoke-on-Trent, Birmingham, Manchester, Salford, and Bradford. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 75, 62, and 73 in the three preceding weeks, fell to 68 last week, of which 13 were registered in London, 7 in Liverpool, 5 in Bristol, and 4 in Manchester. The deaths referred to scarlet fever, which had been 34, 23, and 31 in the three preceding weeks, fell to 22 last week, of which 7 were recorded in London. The fatal cases of enteric fever, which had been 11, 12, and 12 in the three preceding weeks, rose to 17 last week, and included 5 in London and 2 each in Wallasey, Manchester, and Leeds. The death from small-pox was registered in London, and belonged to the borough of Fulham.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 5035 to 3647 in the ten preceding weeks, had further fallen to 3395 on Saturday last; 365 new cases were admitted during the week, against 338, 308, and 326 in the three preceding weeks. These hospitals also contained 1659 cases of diphtheria, 175 of measles, 56 of enteric fever, and 27 of whooping-cough, but not one of small-pox. The 1859 deaths from all causes in London were 101 in excess of the number in the previous week, and corresponded to an annual death-rate of 21·5 per 1000. The deaths referred to diseases of the respiratory system, which had been 472, 417, and 450 in the three preceding weeks, further rose to 497 last week, and were 150 above the number recorded in the corresponding week of last year.

Of the 6995 deaths from all causes, 216 resulted from different forms of violence and 530 were the subject of coroners' inquests, while 1864 occurred in public institutions. The causes of 61, or 0·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Sheffield, Leeds, Bristol, Bradford, Hull, and in 51 other smaller towns. Of the 61 uncertified causes of death 15 were registered in Birmingham, 11 in Liverpool, 5 each in Manchester and Preston, and 2 each in West Bromwich, Bootle, Blackburn, and Darlington.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,345,500 persons at the middle of this year, 1224 births and 1086 deaths were registered during the week ended Saturday, Feb. 6th. The annual rate of mortality in these towns, which had been 22·8, 21·7, and 22·4 per 1000 in the three preceding weeks, further rose to 24·1 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these towns averaged 23·1, against 19·1 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 16·4 in Clydebank, 17·0 in Kilmarnock, and 20·8 in Edinburgh, to 29·5 in Coatbridge, 32·3 in Perth, and 39·1 in Dundee.

The 1086 deaths from all causes were 77 in excess of the number in the previous week, and included 147 which were referred to the principal epidemic diseases, against numbers rising from 92 to 128 in the three preceding weeks. Of these 147 deaths, 86 resulted from whooping-cough, 17 from scarlet fever, 16 from infantile diarrhœal diseases, 13 each from measles and diphtheria, and 2 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 3·3, against 1·5 per 1000 in the large English towns. The deaths attributed to whooping-cough, which had increased from 28 to 82 in the six preceding weeks, further rose to 86 last week, of which 47 occurred in Glasgow, 22 in Dundee, 6 in Edinburgh, 4 in Motherwell, and 3 in Greenock. The deaths referred to scarlet fever, which had been 9, 16, and 12 in the three preceding weeks, rose to 17 last week, and included 9 in Glasgow and 2 each in Edinburgh, Hamilton, and Clydebank. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 7, 8, and 15 in the three preceding weeks, further rose to 16 last week; 8 deaths belonged to Glasgow, 3 to Dundee, and 2 to Hamilton. The deaths attributed to measles, which had averaged 7 in the four preceding weeks, rose to 13, of which 11 occurred in Dundee. The deaths referred to diphtheria, which had been 10, 8, and 10 in the three preceding weeks, further rose to 13 last week, and comprised 4 each in Glasgow and Edinburgh, 2 each in Aberdeen and Paisley, and 1 in Ayr. The fatal cases of enteric fever were recorded in Glasgow and Edinburgh.

The deaths referred to diseases of the respiratory system, which had been 275, 238, and 272 in the three preceding weeks, further rose to 302 in the week under notice, and were 123 in excess of the number recorded in the corresponding week of last year. Thirty-six deaths were associated with different forms of violence, against 30 in each of the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland with an aggregate population estimated at 1,212,380 persons at the middle of this year, 661 births and 609 deaths were registered during the week ended Saturday, Feb. 6th. The annual rate of mortality in these towns, which had been 24·4, 24·0, and 24·7 per 1000 in the three preceding weeks, further rose to 26·2 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these towns averaged 25·2, against 19·1 and 23·1 per 1000 in the English and Scotch towns respectively. The annual death-rate last week was equal to 30·5 in Dublin (against 21·5 in London and 22·7 in Glasgow), 25·2 in Belfast, 27·9 in Cork, 29·1 in Londonderry, 23·0 in Limerick, and 15·2 in Waterford, while in the 21 smaller towns the mean death-rate was 20·7 per 1000.

The 609 deaths from all causes were 34 in excess of the number in the previous week, and included 38 which were referred to the principal epidemic diseases, against numbers declining from 48 to 32 in the three preceding weeks. Of these 38 deaths, 13 resulted from whooping-cough, 10 from infantile diarrhœal diseases, 6 from measles, 5 from scarlet fever, 3 from diphtheria, and 1 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·6, against 1·5 and 3·3 per 1000 in the English and Scotch towns respectively. The deaths attributed to whooping-cough, which had been 10, 9, and 11 in the three preceding weeks, further rose to 13 last week, of which 7 occurred in Dublin and 4 in Belfast. The deaths of infants (under 2 years) referred to diarrhœa and enteritis, which had been 14, 4, and 8 in the three preceding weeks, rose to 10 last week, and comprised 6 in Dublin, 3 in Belfast, and 1 in Larne. The fatal cases of measles, which had been 12, 15, and 4 in the three preceding weeks, rose to 6 last week, of which 4 belonged to Belfast. The 5 deaths attributed to scarlet fever were slightly in excess of the average in recent weeks, and comprised 4 in Belfast and 1 in Waterford. Of the 3 deaths referred to diphtheria, 2 occurred in Dublin and 1 in Cork The fatal case of enteric fever was registered in Limerick. In addition to the above deaths, 3 fatal cases of typhus were recorded in Londonderry and 1 in Dublin.

The deaths referred to diseases of the respiratory system, which had been 164, 137, and 160 in the three preceding weeks, further rose to 172 in the week under notice. Of the 609 deaths from all causes, 173, or 28 per cent., occurred in public institutions, and 6 resulted from different forms of violence. The causes of 27, or 4·4 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the English towns the proportion of uncertified causes did not exceed 0·9 per cent.

THE IRISH ROYAL COLLEGES AND BELGIAN STUDENTS.—The Royal Colleges in Ireland have agreed upon two important concessions to Belgian medical students who are in forced exile from their own country. In the first place, the curriculum of the four Belgian Universities will be accepted as qualifying to sit for the examinations of the Conjoint Committee of the Royal Colleges. In the second place, the Conjoint Committee is authorised to remit the fees in the case of Belgian students who are unable to pay them.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Aid for the Belgian Doctors and Pharmacists.

AT the request of Sir Rickman Godlee, Dr. Herbert A. Bruce, Toronto, has successfully organised a strong and representative committee of the leading physicians and pharmacists of Canada, having for its object the relief of Belgian doctors and pharmacists. The central committee is located in Toronto, where meetings are being held regularly and the work prosecuted with vigour. Dr. Walter McKeown acts as secretary and Dr. David Gibb-Wishart as treasurer. Its personnel consists of presidents of the national and provincial medical societies, presidents of the various Medical Councils, the editors of the medical journals, and the deans of the medical departments of the universities. Although just organised there has already been made a number of substantial contributions from the members of the professions in Toronto as well as from some private citizens.

Medical Reciprocity in Ontario with Great Britain.

Late in December a special meeting of the newly elected Medical Council of Ontario was called in Toronto, and the subject of medical reciprocity was fully discussed. It was resolved unanimously to approve of the principle of medical reciprocity; and the Legislative Committee of the Council was instructed to lay the matter before the Ontario Legislature for sanction, and also to bring the proposition before the General Medical Council of the United Kingdom. When Ontario falls in line that will make five provinces in Canada having reciprocity with the motherland—namely, Prince Edward Island, Nova Scotia, New Brunswick, and Quebec. It will only remain then for the four western provinces to complete the arrangement for all Canada.

The Canadian Medical Profession and the War.

It is reported that already Canada has 160 medical men serving the Empire either in England or at the front; and many more are in line for the front with Canada's second contingent. Many of the leading men have volunteered for service, and others have actually taken training. Altogether in Toronto, after the second contingent has been supplied, there is a waiting list of nearly 200. McGill Medical Department will send in the spring a complete hospital staff from the members of the medical faculty and the student body, the nurses being selected from the various hospitals of the city. Dean Birkett will be in command. Queen's University Medical Department, Kingston, Ontario, has also offered a complete general hospital. And now comes another offer from the French-Canadian medical men and students at Laval University, Montreal, for still another general hospital. Not only for active service, but for relief, the medical profession of Canada is well to the fore. An example of what medical societies are doing is seen in the case of a recently organised society in Toronto, the Æsculapian Club, of some 70 members. This society has practically donated all its reserve funds: to the Patriotic Fund, $100; Ladies' Comforts for Soldiers Fund, $50; Belgian Relief, $200; and for surgical supplies to wounded in Northern France and Belgium, $50.

Toronto University and German Professors.

The University of Toronto has been very much in the public eye during the past two or three months owing to having retained on its teaching staff three German professors. One of the governors, a prominent financier, died suddenly, but left a letter which deprecated retaining these professors on the staff in war time, or of even permitting them to retain their connexion with the University, although released from their duties on full pay. Still another leading financier and public man, Sir Edmund Osler, protested, and resigned over the matter. The result has been the departure of two of the German professors for the United States, whilst the third remained in Toronto and took out naturalisation papers. So far that professor has been allowed to provide a substitute. This has brought the president of the University, whose rule is practically predominant, owing to recent legislation, into difficulties.

Queen's University and the War.

When the war began no university in Canada responded to the call so promptly or did so well as that of Queen's at Kingston. This was due to the splendid work of the Faculty of Applied Science. A company of engineers was sent to Valcartier, which was the only organised contingent at that camp. Of the work they did there professional soldiers and others qualified to speak have done so in the highest terms. With the second Canadian contingent another well-trained corps will go, being again the only Canadian university to send an organised unit. Of the 80 members of this unit 70 are members of the Kingston School of Mining, the other 10 being picked from the Faculties of Arts and Medicine.

Jan. 27th.

Correspondence.

"Audi alteram partem."

THE VALUE OF TINCTURE OF IODINE AS A BACTERICIDE.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Jan. 2nd Dr. Alexander Brown asks if the tincture of iodine, or a 2 per cent. solution, can destroy bacteria and their spores. Since there are several hundred varieties of bacteria recorded as excitants of disease, and as there may be wide differences in their resistance to antiseptics, much more experimental work must be undertaken before a comprehensive answer to Dr. Brown's inquiry can be given. The following experiments, which I made two years ago, though they offer a very partial answer to the question, may be of interest at the present moment. I had been asked by Dr. J. R. Bentley, of Limpsfield, to suggest a douche for a case of cystitis. The patient had had his prostate removed, to his great relief, but his cystitis persisted despite a partial relief from an autogenous vaccine of the B. coli present in his urine. The failure to clear up the infection was attributed to the sacculated condition of the bladder. An emulsion of living B. coli, obtained from a catheter specimen of the urine, was divided into six equal portions. To each portion an equal volume of solution of tincture of iodine in varying strengths, distilled water being the diluent, was added. Thus—

Tubule	No. 1 = 2%	tincture of iodine in distilled water.			
,,	No. 2 = 1%	,,	,,	,,	,,
,,	No. 3 = 0·5%	,,	,,	,,	,,
,,	No. 4 = 0·25%	,,	,,	,,	,,
,,	No. 5 = 0·125%	,,	,,	,,	,,
,,	No. 6 = 0·0625%	,,	,,	,,	,,

These tubules were at once placed in the incubator at 37° for five minutes only and directly afterwards an equal volume from each was pipetted into a tube of gelose. The inoculated culture tubes were incubated at 37° for 24 hours and no growth occurred in any of them. The deduction was that the tincture of iodine solution, in each of six strengths (2 per cent. down to 0·0625 per cent.), had proved an effective bactericide. Irrigation of the bladder with 0·2 per cent. strength was recommended. This proved to be quite unirritating, and cultures taken on the following day showed marked diminution in the number of colonies of B. coli.

The coliform group of bacteria is a very large one, very widely spread, and plays a most important rôle in many infections, though perhaps not often the leading part. Its vitality in most strains is above that of many other common pathogenic microbes. Yet its resistance, if one may safely argue from the above tests, to iodine solutions falls far below that strength (tincture, or 2 per cent. solution) generally employed by surgeons.

Some years ago I had considerable experience of very severe accidents amongst the Durham miners. Extensive lacerated wounds, always badly contaminated with the highly septic pit dust, were very frequent, and I generally brushed them over freely with tincture of iodine. Where this was done subsequent occurrence of suppurating cellulitis was very rare. For bad compound fractures I preferred to rely upon free irrigation with 1 in 5000 solution of perchloride of mercury. The latter solution never let me down in major midwifery operations, under the most unfavourable sanitary conditions, even when puerperal septicæmia was epidemic in the district, provided that the uterus and vagina were thoroughly irrigated at the conclusion of the labour. When, in deference to various authorities, who said that perchloride was futile because it formed a surface coagulum, I abandoned my routine for other antiseptics I not infrequently had serious trouble.

With regard to the action of iodine upon spores, my experience is limited to a few of the common, innocuous bacteria of the spore-producing species. Some of the B. vulgatus family occur not infrequently as contaminations in the preparation of vaccines from throat cultures or from pyorrhœa. For three years I have made a practice of adding 0·5 per cent. of tincture of iodine to the emulsions after heating for an hour at 55° on three successive days. Subsequent cultures have invariably proved sterile, and I have attributed that sterility to the action of the iodine, since spores would probably have survived the comparatively low heat used.

I am, Sir, yours faithfully,

H. LYON SMITH, M.D. Durh.

Bentinck-street, W., Feb. 8th, 1915.

LICE AND RHEUMATISM AMONGST SOLDIERS.

To the Editor of THE LANCET.

SIR,—I have read with very great interest Sir Lauder Brunton's letter with this title in your issue for Feb. 6th, but among the remedies for body lice he does not mention paraffinum liquidum (B.P.), which can also be obtained in a crude state. The B.P. preparation is very largely used at our cleansing station in Poplar in the treatment of verminous children. After the bathing of the children liquid paraffin is smeared on the heads so that any lice may be killed as they are hatched from nits which have not been removed by combing the hair with a fine tooth comb dipped in methylated spirit or by application of the same by dabbing any discovered nits. If a little mercury perchloride, half grain to the ounce, is added to the spirit it makes the application more effectual. A very common household method of loosening the nit is the application of vinegar or acetic acid. Respecting Dr. S. Monckton Copeman's article on p. 273 of the same issue, I have known many mothers use the ordinary paraffin, but this is dangerous, the flash point being low, but that of liquid paraffin (B.P.) is high. Two handbills are circulated in the borough of Poplar *re* body and head lice, and the liquid paraffin (B.P.) is not only recommended for the head, but also, when dried after a bath, for gently rubbing over the whole body, except the face, leaving a thin layer of the liquid.

I am, Sir, yours faithfully,

FRED. WM. ALEXANDER,
Medical Officer of Health, Metropolitan Borough of Poplar.

Bow-road, E., Feb. 6th, 1915.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Feb. 6th you publish a letter from Sir Lauder Brunton under the above heading in which he enumerates 11 drugs as useful for the cure of the former and sulphur powder applied externally as a remedy for the latter disease.

In my book on "The Treatment of Diseases of the Skin," under the chapter on pediculosis, the following paragraph occurs on p. 169: "Sulphur wrapped up in a piece of flannel or in a porous bag and worn about the person next to the skin acts in many cases as a preventative." If our soldiers resorted to this very simple remedy they might remain free from both complaints.

I am, Sir, yours faithfully,

W. KNOWSLEY SIBLEY.

Cavendish-place, W., Feb. 7th, 1915.

THE SHORTAGE OF RESIDENT MEDICAL OFFICERS.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Feb. 6th Mr. W. M. Wilcox, secretary of the East London Hospital for Sick Children, suggests that there is a shortage of resident doctors. Perhaps if a reasonable payment be given the very "alleged" shortage will disappear. The local educational authorities now pay not less than £250 to freshly qualified doctors, while the equally fresh tuberculosis medical officers under the National Insurance Acts receive up to £350. I am told that about 3000 doctors have entered their names at the Admiralty and War Office. Each accepted will receive about £1 per day on service. May I add that many of the steamship companies are now paying their surgeons £15 to £20 per month, a bonus of £50 per annum, the right to charge fees to saloon passengers, and admission to membership for the pension fund. The present resident doctor at voluntary hospitals is paid a lost-dog's wage and is financially on the same degrading level as the Poor-law medical officer. Even residents in Poor-law infirmaries now obtain over £250 per annum, extra fees, with board, lodging, and washing—i.e., about £450. Let Mr. Wilcox attempt to do away with the dog-in-the-manger policy of doctors now acting as visiting

men to the voluntary hospitals and double the staff of such. This number can be increased by 10,000 in one week by appointing local district visiting staffs. At Liverpool the majority of the visiting doctors are entitled to charge full fees to hospital patients occupying pay beds and pay wards. Local doctors will not be excluded from making a fair wage if appointed. Only a little common sense is required to meet the "scarcity of doctors" bogey. Will the "men in possession" agree?

I am, Sir, yours faithfully,

Liverpool, Feb. 8th, 1915. R. R. RENTOUL, M.D.

TUBERCULIN TREATMENT OF PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In Dr. E. G. Glover's communication on this subject in THE LANCET of Feb. 6th occurs the following statement:—

> There is one other point which deserves notice, although perhaps it is a minor one, and it is that the dangers noted after reactions—i.e., extension of disease, increased activity, pleurisy, and pneumothorax—are unfortunately, as the Registrar-General will testify, the dangers of the disease itself.

Such a remark has no bearing on the danger or otherwise of administering tuberculin. No sound critic of tuberculin ever imputed to tuberculin a capacity to do more than increase the disease, and because the disease spreads and produces the above results in many untreated cases, this in no way removes tuberculin from the list of agents which may hasten the above calamities.

I am, Sir, yours faithfully,

Ayrshire Sanatorium, Feb. 6th, 1915. EDWARD E. PREST.

LEECHES AND THE WAR.

To the Editor of THE LANCET.

SIR,—With regard to Mr. J. D. Marshall's offer in THE LANCET of Feb. 6th, it may be of interest to state that leeches of the official variety are obtainable to a limited extent through the ordinary trade channels at a cost less than one-fourth that mentioned by Mr. Marshall for Limnatis granulosa. This institution received a small number of leeches of French origin this week.

I am, Sir, yours faithfully,

London Hospital, Feb. 6th, 1915. F. A. HOCKING.

*** But the price of a leech might vary with its capacity.—ED. L.

THE DEARER LOAF.

To the Editor of THE LANCET.

SIR,—As a result of the appearance of your leading article with this title on Jan. 30th, I have been asked by the Corn Products Company, Limited, to forward you some loaves made from a mixture of wheaten flour and cornflour. My son, Mr. William C. Jago, who now controls the Jago Laboratories, has had some loaves baked for me in a test bakery. Samples of these, numbered 1, 2, 3, and 4, were forwarded to you yesterday.

The following are particulars of the mixtures from which the respective loaves were made: 1. London Town household flour only, with salt, yeast, and water. 2. Mixture of 90 parts same flour with 10 parts cornflour; in addition gelatinised cornflour at the rate of 4 lb. to the sack of 280 lb., and dry corn starch sugar at the rate of 2 lb. to the sack were used. Other ingredients as before. 3. Mixture of 80 parts same flour with 20 parts cornflour. Additions, &c., as in No. 2. 4. Mixture of 66 parts same flour with 20 parts cornflour and 14 parts peaflour. Additions, &c., as in No. 2. The volumes of the resultant loaves, each made from 560 grammes of the flour or flour mixture, were as follows: (1) 2839 c.c.; (2) 2676 c.c.; (3) 2593 c.c.; (4) 2022 c.c. The mixed flour loaves were all smaller than that from unmixed flour, but in every case they were of fair volume and good open texture. The loaves themselves will, however, best show you the general characters of the resultant bread. I think you will agree that in colour and general appearance Nos. 2 and 3 are fairly equal to No. 1, and would prove quite as digestible. The employment of No. 2 mixture would increase the available supply of breadstuffs from 100 parts to 111 parts, while in the case of No. 3 the increase would be from 100 parts to 125 parts.

In the case of No. 4 the object of the experiment was somewhat different—viz., to prepare bread that should have about the same protein value as the white flour used in the preceding mixtures. A sample of the flour yielded 10 per cent. of protein on analysis. Taking the protein content of peaflour at 25 per cent., a mixture of two parts of peaflour to three parts of cornflour would also contain 10 per cent. of protein, and might therefore be used in any desired proportion with the wheaten flour without altering its protein content. In the case of No. 4, two parts of wheaten flour were taken to one part of the pea and corn flour mixture. This represents a somewhat large addition to a flour which, to start with, was somewhat on the weak side. The dough was naturally very friable in the handling, but nevertheless made a fair loaf. Again, the sample itself will best show you the nature of the bread. (In all cases please make allowance for the staleness and effects of packing on the loaves when they reach you.) I think you will agree that this bread is not at all unpleasant in either appearance or flavour. Judging from its physical character I should say such bread would be very digestible and its proteins capable of very good absorption. In all probability the ratio of absorption would be slightly higher than is the case of the white bread. The use of such a mixture, if necessity arose, would raise the amount of available bread-stuffs from 100 to 150 parts and with no loss of nutritive value.

At present market prices the No. 4 mixture works out slightly lower in price than the flour. There is not likely to be any shortage in the world's supply of cornflour, and in addition to peas there are lentils and soya beans to draw on as auxiliary sources of protein. The latter especially is exceedingly rich in flesh formers, and yields a flour which is light in colour and of pleasant flavour.

I am, Sir, yours faithfully,

Hove, Sussex, Feb. 6th, 1915. WILLIAM JAGO.

*** The results are quite interesting. The loaves received appeared to us to be quite acceptable in regard to texture, flavour, and appearance.—ED. L.

LONDON UNIVERSITY EXAMINATIONS AND THE NEW PHARMACOPŒIA.—The regulations for the second examination for medical degrees, Part II., have been amended by the insertion of the following footnote: At the examinations in pharmacology held in March and July, 1915, students will be permitted to base their replies either on the old or on the new edition of the Pharmacopœia provided that they shall be required to state on which edition such replies are based. In and after March, 1916, replies must be based on the new edition of the Pharmacopœia.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THE Fund has during the week received a fair number of subscriptions, conspicuous among them being a cheque from the Ontario Medical Association for £102 13*s.* 4*d.*

The Liverpool subscriptions, which for the present remain in the hands of the Liverpool Medical Institution, have continued to come in, and a vigorous start is being made in Manchester under the auspices of a strong local committee.

CENTRAL EXECUTIVE COMMITTEE.

Certain cases of distress have been relieved immediately, on the representation of Dr. Clément Philippe, the President of the Société Belge de Médecine et de Pharmacie en Angleterre, and there has been some success in finding work for Belgian practitioners, under the recent privilege of British registration. It seems doubtful whether the General Medical Council will be able to reduce or remit the fees of Belgians desiring to register, and it may devolve upon the Fund to advance the money in some cases. There was no Belgian doctor found to fill a post where a single man was required, all the available Belgian practitioners being married. The receipts of garments, both for men and women, at 3, Hyde Park-street, London, W. (Dr. Philippe's house, kindly lent for the purpose), have been satisfactory, and the hours of distribution have been arranged as follows: Wednesday, 10 A.M. to 12 noon for men, and Friday between the same hours for women.

The case of surgical instruments designed for Belgium, and reported last week as being at the Tunnel Wharf, Rotherhithe, has been forwarded to Brussels, *viâ* Rotterdam, in the S.S. *Vesuvie*, which sailed on Feb. 1st.

THE MANCHESTER COMMITTEE.

An important committee has been formed at Manchester, and a circular is on the point of being issued to the local members of the medical and pharmaceutical professions setting out the position of their Belgian colleagues. The circular is signed by Dr. Alfred Brown, President, Manchester Pathological Society; Mr. J. Gray Clegg, President, Manchester Clinical Society; Dr. Archibald Donald, President, Manchester Medical Society; Mr. James Grier, President, Manchester Pharmaceutical Association; Dr. T. Arthur Helme, President, Manchester Medico-Ethical Society; and the following members of the central committee: Sir William Milligan, Professor G. Elliot Smith, and Mr. William Thorburn. Dr. E. M. Brockbank, Northern Assurance Buildings, Albert-square, Manchester, and Mr. Tom Miller, pharmacist, 5, Yarburgh-street, Whalley Range, are acting as honorary secretaries.

Subscriptions may be sent to either of the secretaries, who will acknowledge their receipt and pass them on to the Central Fund. They will also be acknowledged in the medical and pharmaceutical papers. Cheques should be crossed "Lancashire and Yorkshire Bank, Limited."

Contributions of surgical instruments likely to be of use to the Belgian doctors may be sent to the Library of the Medical Society, University of Manchester, where they will be sorted and sent on to London.

The Manchester Committee propose also to appeal to the public through the lay papers.

THE FUND OF THE LIVERPOOL MEDICAL INSTITUTION.

The following is the second list of subscriptions which have been collected by the Liverpool Medical Institution:—

	£	*s.*	*d.*
Dr. G. A. Crace-Calvert	5	5	0
Dr. John E. Gemmell ...	5	5	0
Dr. R. Wyse	5	0	0
Dr. A. S. Parkinson (second subscription)	4	4	0
Dr. J. E. Stott...	2	2	0
Dr. J. C. M. Given ...	2	2	0
Dr. A. A. Mussen	2	2	0
Dr. A. C. E. Harris ...	2	2	0
Dr. A. C. Wilson	2	2	0
Dr. Walter C. Oram ...	2	2	0
Dr. J. F. Gordon	2	2	0
Dr. T. Glynn Morris ...	2	2	0
Dr. T. B. Grimsdale ...	2	2	0
Dr. A. E. Hawkes	2	2	0
Dr. W. Morland Hocken	2	2	0
Dr. G. S. Stansfield ...	2	2	0
Dr. Harry Holmes... ...	2	2	0
Professor J. M. Beattie	2	2	0
Mr. Arthur Evans	2	2	0
Dr. Harriet Jones	2	0	0
Dr. Douglas Moffatt ...	1	1	0
Dr. Bennett Jones ...	1	1	0
Dr. C. Alston Hughes ...	1	1	0
Dr. W. Hardy Fleetwood	1	1	0
Dr. R. Paterson	1	1	0
Dr. A. F. Seacome ...	1	1	0
Dr. W. Mactie Campbell	1	1	0
Dr. John Robson	1	1	0
Dr. H. Wycliffe Fisher	1	1	0
Dr. David Morgan	1	1	0
Dr. W. Sanderson	1	1	0
Dr. O. F. Evans	1	1	0
Dr. F. F. German	1	1	0
Dr. Albert E. Davis ...	1	1	0
Dr. Isaac Harris	1	1	0
Dr. A. A. Meeson	1	1	0
Dr. E. I. Claxton	1	1	0
Dr. R. G. Sheldon	1	1	0
Dr. W. Cash Reed... ...	1	1	0
Dr. K. V. Trubshaw ...	1	1	0
Dr. R. Lucius Wood ...	1	1	0
Dr. J. J. Tisdall	1	0	0
Dr. F. Ingall	1	0	0
Dr. A. C. Lewis	0	10	6
Dr. N. H. Blair	0	10	6

The Liverpool Belgian Doctors' Relief Fund is intended for the relief of Belgian doctors, and we are informed that the Liverpool Chemists' Association is forming a local fund for the relief of their professional colleagues. The money in the hands of the Liverpool Medical Institution amounted on Feb. 4th to £382 10*s.* 3*d.* The Fund is still open, and subscriptions should be sent to Dr. T. R. Bradshaw, at the Institution, 65, Rodney-street, Liverpool.

THE DURHAM AND NEWCASTLE DISTRICT.

Dr. A. S. Percival, 17, Claremont-place, Newcastle-on-Tyne, who is acting as one of the joint secretaries of the movement in this district, has written to the constituency in the following terms:—

"We are under a lasting obligation to Belgium for her magnificent stand against the German invaders; indeed, it is an obligation that can never be fully repaid, and it should be regarded as a privilege to have this opportunity of showing our sympathy with our fellow practitioners. Chiefly with this end in view a meeting will be held at the College of Medicine, Newcastle-upon-Tyne, on Wednesday next, Feb. 17th, at 4 P.M. An address will be given by Professor Jacobs of Brussels, who will give evidence of certain startling facts that for ruthless and savage barbarity have no equal. All doctors and pharmacists are invited to attend the meeting, at which it is proposed to form a committee for dealing with Belgium's appeal. Meantime, any subscriptions that are sent to me in aid of the Fund will be gratefully acknowledged and duly reported in the medical journals."

THE WEEK'S SUBSCRIPTIONS.

The subscriptions received by Dr. Des Vœux up to Tuesday evening last, in addition to those previously acknowledged, amounting to £5000, and not including money received by the Scottish or Irish Funds, are as follows:—

	£	*s.*	*d.*
Mr. W. Thomson Walker	5	5	0
Brussels Medical Graduates' Association (per Dr. Major Greenwood, Treas.), third donation	2	2	0
Dr. Lauriston Shaw ...	5	5	0
Miss Lilian T. Rowland, M.B.	2	2	0
Professor J. A. Kynoch	2	2	0
British Milk Products Company	73	19	9
Dr. J. Duncan Kendry...	1	1	0
Dr Burra (per Dr. Larking)	1	0	0
Oldham Medical Society, collected by (per Dr. F. L. Pochin)— Oldham Medical Society	10	10	0
Dr. Lawrie...	5	0	0
Dr. Robertson!... ...	5	0	0
Dr. J. Fort	3	3	0
Dr. W. White	3	3	0
Dr. Olive Claydon ...	3	0	0
Dr. Cammock	2	2	0
Dr. Fawsitt	2	2	0
Dr. Henderson ...	2	2	0
Dr. Hutton	2	2	0
Dr. Kinnear	2	2	0
Dr. Yates	2	2	0
Dr. H. J. Gill	2	0	0
Dr. Anderson	1	1	0
Dr. Corns	1	1	0
Dr. Doble	1	1	0
Dr. Fulton	1	1	0
Dr. Godson	1	1	0
Dr. Heap	1	1	0

	£	s.	d.
Mr. J. W. Leach ...	1	1	0
Dr. McGowan	1	1	0
Dr. Martland	1	1	0
Dr. Pochin	1	1	0
Dr. Radcliffe	1	1	0
Dr. Ross	1	1	0
Dr. W. B. Yates ...	1	1	0
Dr. R. Bowes	1	0	0
Dr. H. Gill	1	0	0
Dr. Broomhead ...	0	10	6
Dr. Mawdsley	0	10	6
Dr. Wilkinson	0	10	6
Dr. Wood	0	10	0
Dr. Thompson	0	5	0
Dr. A. J. Turner	2	2	0
Capt. Shingleton Smith, I.M.S.	30	0	0
Messrs. Dolbear and Goddall	1	1	0
Dr. Alex. MacLennan ...	1	1	0
Mr. J. P. Ellerington (La Pharmacie Française (fourth donation)	5	0	0
Dr. H. J. Roper	2	2	0
Dr. G. Ransford	2	2	0
Dr. S. E. Whitnall	0	10	6
Lieutenant-Colonel D. G. Crawford, I.M.S. ...	5	0	0
Sir Donald MacAlister, K.C.B.	10	0	0
Ontario Medical Association (per Dr. J. Gibb-Wishart)	102	13	4
Dr. James Arthur	1	1	0
Anon. (per Mr. J. Y. W. MacAlister)	2	8	0
Messrs. Jay, Richard Attemborough & Co., Limited	1	1	0
Dr. R. Prosser White ...	2	0	0
Mr. Lawrence Jones ...	3	3	0
Lincoln Chemists' Association (per Mr. John Hague, Treas.)	3	3	0
Dr. E. G. Boon	1	1	0
Mr. H. Betham Robinson	2	2	0
Staffordshire Branch, South Staff. Division, B.M.A. (per Dr. H. C. Mactier, Hon. Sec.):—			
Dr. J. A. Codd ...	1	1	0
Mr. F. W. Joynes ...	1	1	0
Mr. H. Ruskin Hancock	1	1	0
Dr. David Mann ...	1	1	0
Dr. Edith Serjeant	1	1	0
Dr. H. C. Mactier ...	1	1	0
Dr. Irene Bastow	1	1	0
City Division, B.M.A. (per Dr. C. F. Hadfield, Hon. Treas.)—			
Dr. J. O. Adams ...	5	0	0
Anon.	1	1	0
Dr. Frank Butler ...	1	1	0
Dr. Effie Brander ...	1	1	0
Dr. N. Benoly	1	1	0
Dr. Oliver Beddard	1	1	0
Dr. Reginald Brown	1	1	0
Dr. E. H. Crisp ...	5	0	0
Dr. Leslie Burne ...	2	2	0
Dr. Cuthbert Dixon	1	1	0
Dr. J. C. Dunn ...	1	1	0
Dr. I. Dorran	1	1	0
Dr. C. E. Evans ...	1	1	0
Dr. G. E. Froggatt ...	1	0	0
Dr. E. W. Goodall ...	2	2	0
Dr. Major Greenwood	1	1	0
Dr. A. Withers Green	1	0	0
Dr. C. F. Hadfield ...	1	1	0
Dr. J. W. Hunt ...	1	1	0
Dr. J. Moore Hall ...	1	1	0
Dr. G. B. Hicks ...	1	1	0
Dr. J. Jaffe	1	1	0
Dr. H. L. Jenkins ...	1	1	0
Dr. Gerald Johnston	3	3	0
Dr. A. D. Lewis ...	1	1	0
Dr. G. Lowsley ...	1	1	0
Dr. J. J. Macnaboe ...	1	1	0
Dr. G. I. Moriarty ...	0	10	6
Dr. J. Mansie	1	1	0
Dr. T. W. Maddison	1	1	0
Dr. I. B. Muirhead ...	3	3	0
Dr. E. J. Moore ...	1	1	0
Dr. J. Maguire ...	1	1	0
Dr. A. L. Marshall ...	5	0	0
Dr. J. O'Dwyer ...	1	1	0
Dr. David Petty ...	1	1	0
Dr. H. C. Powell ...	1	1	0
Dr. J. H. Porter ...	1	1	0
Dr. H. Vaughan Pryce	1	1	0
Dr. T. Rushbrooke ...	1	1	0
Dr. B. Rowlands ...	2	2	0
Dr. David Ross ...	1	1	0
Dr. A. H. Rideal ...	1	1	0
Dr. A. G. Southcombe	1	1	0
Dr. Montague Smith	1	1	0
Dr. Rowland Smith	1	1	0
Dr. A. T. Swan	1	1	0
Dr. R. Taylor	1	1	0
Dr. Wm. Taynton ...	1	1	0
Dr. W. Whitelaw ...	1	1	0
Dr. A. W. Webb ...	0	10	6
Dr. Elizabeth Wilks	2	2	0
Dr. T. C. Winn ...	1	1	0
Dr. S. Wilson	1	1	0
Dr. John Young ...	1	1	0
Dr. A. C. Williams ...	1	1	0
Dr. W. J. O. Ray	1	1	0
Eastern Hospital, Homerton-grove (per Dr. J. Whitaker)—			
Dr. J. Harvey	1	0	0
Dr. J. Enright ...	1	0	0
Dr. M. Mayers ...	1	0	0
Dr. J. Whitaker ...	1	0	0
Corner Whist Club (per Dr. Des Vœux)	5	0	0
Dr. F. D. Bennett	2	0	0
Mr. Alban Doran	1	1	0
Dr. J. B. Martin Kennedy	1	1	0
Dr. H. Willingham Gell	2	2	0
Mr. Harold Barwell ...	3	3	0
Dr. William Clow	1	1	0
Dr. E. M. Skeete	1	0	0
Mr. W. H. Battle	10	0	0
Mr. Somerville Hastings	3	3	0
Birmingham Local Committee (per Dr. Robert Saundby, Hon. Sec.), sixth donation—			
Dr. W. H. Pollard (Ambulance Class fee)	5	5	0
Dr. F. R. Sutton ...	2	2	0
Dr. D. S. Murray ...	1	1	0
Dr. Frank Hues	1	15	0
Dr. R. S. Ellis	1	1	0
Collected by Mr. Pollard, of Worcs.—			
Mr. T. P. Gostling ...	1	1	0
Dr. T. P. Cavenagh	1	1	0
Dr. H. F. Seymour	1	1	0
Dr. C. Pollard (addit.)	1	1	0
Dr. H. A. Watson ...	0	10	6
Dr. A. H. Williams	0	10	6
Mr. C. S. Legge ...	0	10	6
Dr. G. W. Crowe ...	0	10	6
Dr. S. W. Coombs ...	0	10	6
Dr. T. Bates, jun. ...	0	10	6
Dr. R. T. Slinger ...	0	10	6
Dr. D. Bower	2	2	0
Cardiff Pharmacists' Association (per Mr. W. R. Williams)	25	0	0
London Pharmaceutical Association "Script" Shilling Fund (per Mr. H. Skinner)	20	6	6
Public Pharmacists' and Dispensers' Association (collected by Mr. G. W. Gibson)	2	10	0
Mr. A. Hagon	1	1	0
Mr. R. T. Clarke	0	10	6
Miss E. Hardwicke ...	0	10	0
Miss M. Gibson	0	5	0
Mr. R. J. Perkin	0	5	0
Mr. A. Hodgson	1	1	0
Dr. G. E. Armstrong ...	20	0	0
Dr. A. H. Martin, President, Postal Medical Officers' Association of England and Wales ...	1	1	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund and crossed Lloyds Bank, Limited. These will be acknowledged by post direct, and a list will appear in THE LANCET weekly.

THE APPEAL FOR SURGICAL INSTRUMENTS.

The Master of the Society of Apothecaries ackowledges with thanks the receipt of surgical instruments kindly contributed by the following donors since the publication of the last list:—

Anonymous, per the Oldham Medical Society; Dr. W. L. W. Marshall, Huddersfield; Dr. G. W. Collins, Wanstead, Essex; Dr. Cosgrave George, Colwyn Bay.

The War.

THE TROOPS AND ANTITYPHOID INOCULATION.

REFERENCE is made in our Parliamentary Intelligence this week to a leaflet on the subject of antityphoid inoculation which is being distributed to the troops. The leaflet is addressed "To All Soldiers," and Lord Kitchener himself supplies a preface in these words:—

"I commend to the careful attention of every Soldier the following statement, to which, in the interests of the health of the Army, I attach great importance.—KITCHENER, F.M."

The statement is as follows:—

In every campaign typhoid fever is a serious element. In the South African War there were many more casualties from typhoid fever than from wounds.

In the present war the best is being done to prevent typhoid fever by extreme precautions in the matter of water-supply, as well as other sanitary measures, but in spite of this a number of men have been affected by the disease.

Inoculation Gives the Body Power to Resist Infection.

It is a means of protection in the efficiency of which those who have studied the question have complete confidence.

Inoculation has nothing to do with vivisection.

The great value of inoculation is shown clearly in the following figures:—

Of the 421 cases in the present campaign among British troops, 305 cases were in men who were NOT INOCULATED within two years.

In the 421 cases there have been 35 deaths

Of these deaths 34 were men who had NOT BEEN INOCULATED within two years.

ONLY ONE DEATH OCCURRED AMONG PATIENTS WHO WERE INOCULATED, and that man had only been inoculated once, instead of the proper number of times—namely, twice.

For your own sake, for your country's sake, and for the sake of the Army you should not fail to avail yourself of the protection secured by this simple, safe, and well-tested measure.

Medical officers are always ready and anxious to inoculate any soldier at any time, and the greatest care is taken in doing so. With proper care it has never been known to do a man harm.

The statement, which seems to be worded in just the right way to impress a soldier audience, is signed by Sir Thomas Barlow, President of the Royal College of Physicians of London; Dr. A. H. Freeland Barbour, President of the Royal College of Physicians of Edinburgh; Sir W. Watson Cheyne, President of the Royal College of Surgeons of England; Dr. E. MacDowel Cosgrave, President of the Royal College of Physicians of Ireland; Mr. F. Conway Dwyer, President of the Royal College of Surgeons in Ireland; Mr. J. W. B. Hodsdon, President of the Royal College of Surgeons of Edinburgh; and Sir Frederick Treves, Sergeant Surgeon to H.M. the King.

THE CASUALTY LIST.

The official casualty lists published since our last issue have contained the name of one medical officer, Captain James Alexander Terras Bell, M.D., New Zealand Medical Corps, reported as having died in Egypt.

MEDICAL PRECAUTIONS AGAINST AIR RAIDS.

In an annotation with the above title in THE LANCET of Jan. 9th the surgical aspects of an air raid upon London were briefly discussed, and it was stated that a scheme of preparation against such an outrage had been carefully thought out. With the sanction of the military and police authorities this scheme has now been elaborated and

extended to include vulnerable places on the coast. The committee of the Royal Society of Medicine, which has been occupied with the medical side of the matter, has now organised a service of surgeons, anæsthetists, and dressers, ready to proceed at once in self-contained units to any point where their services are required, travelling either by motor-car or by special train according to the needs of the occasion.

THE DISLOCATION OF MEDICAL SERVICE.

A meeting of medical practitioners and senior students was held in the Royal College of Surgeons, Edinburgh, on Monday last, when Mr. Hodsdon, President of the College and chairman of the meeting, spoke forcibly on the situation of civilian practitioners. Many civil practitioners, he said, had attached themselves to various units, and were willing to spend their spare time in military duties, but they were not prepared and did not anticipate that they would be called away from their practice at a moment's notice. At that moment there were men who had not been back to their practice since they were called up during the mobilisation in August. The Scottish Medical Service Emergency Committee had assisted medical men who were with the colours, while at the instance of the General Medical Council the War Office had now made exchanges possible whereby the Scottish practitioner might find himself back in his own town.

Dr. Norman Walker, convener of the Scottish Medical Service Emergency Committee, said that the work of the committee had extended far beyond that of merely introducing assistants or locum tenents to men who wanted them. The dislocation of medical practice in the country had increased, and was still increasing, and if they were to avoid a serious breakdown in the medical service in Scotland they must realise the situation, for more demands would be made upon them, and the supplies would have to be very carefully husbanded if they were to meet that demand. They had to supply recruits for two armies—one the King's forces, and the other the standing army for home defence against the constant enemies, disease and death. It was because doctors were as necessary in the army and navy as engineers, gunners, and airmen that it was incumbent on the medical profession to supply the wants of the King's forces. Something over one-sixth of the medical profession were already serving—nearly 7000 out of a total of 37,000—and more were required, for the day was not far distant when six figures would not cover the number of our forces abroad. Seeking where the additional doctors were to come from, Dr. Norman Walker hoped no licensing body, from a sort of morbid patriotism, would admit to the profession insufficiently trained students. The student's business was to work hard, and the teacher's to give more care to his teaching than he ever gave before, so that the student should complete his course in the shortest possible time and then offer his services to the country if there were no valid reason against this course. But if such reason existed it must be remembered that a man still served his country if, by undertaking the work of one who had gone, he so loyally respected his interests that the other went with an easy mind. But the country districts were crying out for doctors, and before many weeks passed they would be very near the Trade Unionist Paradise—"two jobs for every man." Dr. Norman Walker concluded by referring to the new Army Order permitting exchanges, and begged that it should be taken advantage of by medical men.

Principal Sir Donald MacAlister acknowledged how cordially, as soon as it understood the difficulty they were in as regards civil practice, the Army Medical Service responded in the only way they were able to respond. It was quite clear that the civil service must dispense with its ordinary superabundance of practitioners if the army was to be supplied, and the question was whether a proper reorganisation of the civil service could be achieved. For the first two or three months it looked as if it could be done without much difficulty, but difficulties that seemed at first not impossible were becoming almost impossible to overcome, and it was quite certain that the civil community would have to do with a good deal less doctoring if they were to keep the army supplied, as it ought to be supplied, with doctors. They had better face the situation now, he urged, before in some areas the medical service altogether broke down. He believed that by a redistribution of their forces there could be provided a respectable medical service for all the civil population, but the worst of it was that while there was a superabundance in some places there was a very deficient service in others. He did not see any other machinery in existence for attempting the difficult problem of organising a redistribution than the Emergency Committee. A certain number of Belgians would be available, and the reciprocal privilege of practising in Belgium after the war would be no small one. He believed there were also coming to this country about 100 Canadian registered surgeons and a certain number from Australia and India.

The gist of an important meeting was to show that the shortage of medical men is expected in the best-informed circles to become more serious.

UNIVERSITY OF LONDON: SPECIAL LECTURES IN MILITARY HYGIENE.—With the concurrence and assistance of the Army Council a course of nine lectures on "The Health of the Army in the Field" will be given at the Royal Army Medical College, Millbank, S.W., by Major P. S. Lelean, R.A.M.C., F.R.C.S., D.P.H., at 5 P.M., on Feb. 22nd, 24th, and 25th, and March 1st, 3rd, 5th, 8th, 10th, and 12th. The course will form an introduction to the problems of hygiene of forces in the field, for (i.) qualified medical men without military experience; (ii.) combatant officers about to proceed to the front; and (iii.) others interested in the subject (provided the accommodation is sufficient). In the allocation of tickets preference will be given in this order. A detailed syllabus will be available for the lectures, at which the following matters will be dealt with: hygiene of active service, sickness in the army, organisation and administration in the field, water and water-supplies, and conservancy on active service. Arrangements will be made, if desired, for visits of inspection to a typical camp. Applications for tickets should be made to the Academic Registrar, University of London, South Kensington, S.W., and be accompanied by remittance of the fee of £1 1s. Applicants should indicate whether the tickets are required for (1) medical men; (2) combatant officers proceeding to the front; or (3) other persons. Tickets will not be despatched before Feb. 15th.

DENTAL AID FOR THE TROOPS.—A circular letter was issued by the War Office to the various commands on Jan. 22nd with reference to the subject of dental aid for the troops. In this it is announced that, as a temporary measure for the period of the present war only, the existing system whereby a sum of money is allotted to each command for the dental treatment of recruits and serving soldiers will be held in abeyance. During the war all dental treatment necessary to render a non-commissioned officer or man fit for service in the field will

be afforded, including the provision of such artificial dentures as may be considered necessary for efficient mastication. The existing limit of one pound (£1) per man may be exceeded in cases where the work necessitates a higher expenditure, provided that in no case is the expenditure to exceed three pounds (£3) per soldier treated without the special authority of the general officer commanding-in-chief. Where available dentists attached to military hospitals will be employed to the fullest extent. For the supply of artificial dentures the following scale of fees is given as a guide to the maximum cost, having regard to the class of work required: (*a*) Complete upper or lower denture from £2 to £3; (*b*) complete upper and lower dentures from £4 to £6; (*c*) partial upper or lower denture, comprising not more than five teeth, about £1 10*s*., or possibly a little higher.

EDINBURGH IN WAR TIME.—Our Edinburgh correspondent writes: "The Committee of Management of the Triple Qualification of the Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow have announced to students who have undertaken approved service with His Majesty's Forces that applications for partial recognition of such work in lieu of curriculum will be individually considered. Steps will be taken in each case to grant such concessions as appear to the committee to be in accordance with the recommendations of the General Medical Council.—Twenty-nine convalescent sailors from the hospital at South Queensferry, most of whom had been wounded in the recent North Sea fight, were removed on Feb. 3rd by ambulance train to the Marchioness of Bute's auxiliary hospital at Mount Stuart, in the Island of Bute. At Gourock the men were embarked on the Caledonian Company's steamer, the *Duchess of Bute*. Two ambulance wagons were supplied by the Red Cross Society in Edinburgh, and taken by train and boat to Rothesay, for the comfortable conveyance of the seamen to Mount Stuart House. Meals were provided *en route*, cooks being provided on the train by the Red Cross Society. After an appreciable interval, which presumably reflected in some degree the comparatively quiet spell at the front, another hospital train arrived in Edinburgh on the night of Feb. 5th, bearing its burden of 100 wounded soldiers. The wounded were received at the Caledonian Station by the Red Cross workers, with their usual equipment of motor ambulances and motor-cars, and were conveyed to Dalmeny House and the Deaconess Hospital."

A NEW ARMY HUT.—Mr. H. A. Pritchard, A.R.I.B.A., of Cardiff, has designed a hut for the accommodation of soldiers which is now on view at the College of Ambulance, 3, Vere-street, London, W. It is built of wood of standardised lengths, and can therefore be turned out from the saw-mill ready for erection. The outside of the hut is covered with a durable waterproof material which ensures dryness and warmth, and in hot weather would prevent the scorching heat attendant upon corrugated iron. The whole appearance of the hut is like the roof of a dwelling-house, the sides of the roof reaching almost to the ground, whilst at the gable ends are the door and windows at one side and a large window at the other. The hut measures 22 ft. long, 14 ft. wide, and the highest point of the sloping roof is 15 ft. from the ground. The whole hut is raised from the ground some 12 in. on concrete blocks so that there is ample ventilation beneath the oak flooring. The hut can accommodate 14 men, or as many as 16 at an emergency. The ventilation is free and the light ample. The whole hut is collapsible and can thus be easily transferred by road or rail, and can therefore be used by an army on the march as part of its equipment for offices, sleeping accommodation, or for a temporary hospital. The free space in the centre affords room for men to use the hut as a bed-sitting-room. The cost of the hut completed is about £100. There are many ingenious devices which add to the benefits of the hut. Before the door is a "door-mat" consisting of a wooden grill on which the men can get rid of the mud from their boots, which renders huts of this kind like quagmires as a rule. To the upright poles in the hut a movable table is attached, which can be used for a mess-table, or an operating-table if the hut is used as a hospital. Special arrangements for storing utensils, food, &c., are in evidence above the level of the men's heads. Outside at either end of the hut where the roof slopes to the eaves a wide gutter trough receives the water from the roof and from which the water can be run off, or the whole trough can be lifted, placed on supports, and used for washing purposes by a number of men at a time. Instead of the water being allowed to run down to the eaves and the trough, it can be diverted by placing a wooden rod obliquely across the sloping roof, whereby the water is made to issue at one side of the roof, a few feet above the ground, where it can be collected in basins, pails, &c., for future use. Mr. Pritchard's device seems not only ingenious but eminently useful for practical purposes; and the favourable comments passed upon the hut by officials and visitors on Saturday, Feb. 6th, when the hut was inspected at the College of Ambulance, promise well for its success.

AMERICAN WOMEN'S WAR HOSPITAL.—The American Women's War Hospital at Paignton is being enlarged by 30 beds, bringing the total capacity of the hospital up to 230. This addition has been made possible by utilising the fine Riding School. The new ward will be called "St. George" Ward, after a generous donator to the fund, and when completed will be staffed by English and American nurses, as are all the other wards in the hospital.

A RECORD OF ATROCITY.—In the *Field* this week Dr. Arthur Tacquin, physician-in-ordinary to the King of the Belgians, tells the story of German cruelty, insolence, pillage, and arson exactly as it came under his own eye, with photographs taken by himself. The proclamations which the enemy has scattered through Belgium are many of them given in full in a terrible supplement to the great sporting newspaper, and the editorial summary which introduces the startling pictures and text is a red-hot indictment of German crime written in convincing terms.

Medical News.

UNIVERSITY OF DURHAM (COLLEGE OF MEDICINE), NEWCASTLE-ON-TYNE.—At the annual meeting of the Council of this College held on Feb. 9th an illuminated address, in Latin, was presented to Professor Sir G. H. Philipson, M.D., the President of the College, congratulating him on the completion of his 50 years' service to the College. The address called attention in the following terms to his varied and eminent services: "Quis enim nostrum ignorat te pathologiae doctrinam, medendi scientiam atque usum, epistularum academicarum commercium, totius denique Collegii regimen, pari deinceps cum diligentia et humanitate curavisse?"

DONATIONS AND BEQUESTS.—By the will of the late Mr. William Long, of Gloucester, the testator has left £10,000 to the Gloucester District Nursing Society and £3000 to the Gloucester Provident Dispensary.—The late Mr. William Ransom, of Hitchin, has bequeathed £500 to the North Herts and South Beds Hospital.—The late Major W. Barrett, of Moredon, Somerset, has left by will £1000 to the Taunton and Somerset Hospital for the endowment of a bed.

BADGE FOR THE PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—At the last meeting of the Royal College of Physicians of Ireland the ex-President, Dr. C. E. FitzGerald, asked permission to present to the college an official badge to be worn by the President on ceremonial occasions. He wished to commemorate the fact that in his person the college had for the first time elected an ophthalmologist to its highest office. The college gratefully received the gift.

MEDICAL MAGISTRATE.—Dr. William Dunn has been made a Commissioner of the Peace for the county of Rutland.

Dr. Stanley Riseley, until recently ophthalmic surgeon to the Royal Hospital, Sheffield, has died at the early age of 47.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Parliamentary Session.

PARLIAMENT is again in session, and it is expected to sit continuously for four or five weeks. All its attention is being given to problems arising out of the war. Matters of party controversy are not being dealt with.

The Inoculation of British Troops.

Very considerable attention has been given in the House of Commons within the past few days to the subject of the inoculation of British troops against typhoid. There are three distinct sets of opinion on the subject. A very large body of members think that all future recruits who join the army should do so on the express condition that they should undergo inoculation, and that all soldiers who are already in the ranks and refuse to submit to the operation should either be allowed to retire or be allocated to home defence work. No uninoculated men should go to the front. The second set of opinion is that the present system of voluntary inoculation should continue, but that every means of persuasion short of coercion should be exerted to induce men to be inoculated. This view admits the value of the operation, but would leave an option with the individual. The third set of opinion is that of the anti-inoculation party, which is very small numerically. Its activities have been directed to drawing attention to cases in which it alleges illegitimate pressure has been exerted on soldiers to coerce them into undergoing inoculation. In these circumstances it is most important to watch the attitude of the Government and of the War Office. Mr. TENNANT, the Under Secretary for War, stated in the House of Commons this week that the evidence was accumulating in favour of the inoculation of our troops. The matter of making it compulsory was under consideration, and he hoped to be able to give a definite answer shortly. Some highly significant statistics showing the beneficial effect of inoculation against typhoid in the present war have been given to Parliament in the course of the last few days.

HOUSE OF COMMONS.

THURSDAY, FEB. 4TH.

Treatment of Mental Strain amongst Soldiers.

Mr. DUNCAN MILLAR asked the Under Secretary for War whether steps had been taken to secure that the treatment of soldiers and sailors suffering from mental strain should be carried out in hospital wards or other institutions not under lunacy administration, so as to avoid sending all such cases, which were not certifiable, to asylums.—Mr. TENNANT replied: Every endeavour is being made to treat patients suffering from traumatic neurasthenia and cases of mental strain in such a manner as to avoid sending those not certifiable into asylums. For this purpose arrangements have been made to treat such cases in certain private and civil hospitals in the United Kingdom, and a Red Cross Military Hospital has been opened in Lancashire for their reception. This latter hospital is administered by and the patients are under the care of medical officers holding commissions in the Royal Army Medical Corps.

Mr. DUNCAN MILLAR: Is the War Office prepared to make a grant for equipment?—Mr. TENNANT: I do not think so.

Inoculation against Enteric Fever.

Mr. LAURENCE HARDY asked the Under Secretary for War whether he was aware of the campaign which was in existence for the purpose of discouraging our soldiers in the new armies from being inoculated against enteric and other similar diseases; whether, in view of the statistics in support of inoculation, as shown during the present war, measures would be at once taken against any organisation which carried on such an agitation; and whether he would consider whether the time had now come when inoculation should be made compulsory for all soldiers proceeding to the front on active service, both for their own sakes and those with whom they were in contact.

Mr. PETO also asked the right honourable gentleman whether inoculation against typhoid fever and vaccination against small-pox would in future be compulsory for all ranks in the military forces of the Crown before they were sent on service over-sea during the currency of the present war.—Mr. TENNANT (replying to both questions) said: The answer to the first point in the question of the honourable Member for Ashford (Mr. L. Hardy) is in the affirmative, and to the second is that it is not proposed to take any action against the organisations referred to. As regards compulsion, I am advised that legislation would be necessary. The introduction of a Bill is not at present contemplated, though this may be further considered should necessity arise.

Pay of Medical Officers in the Territorial Force.

Mr. STEWART asked the Financial Secretary to the War Office whether medical officers in the new army were paid £1 4*s*. a day, whereas medical officers who had served for years in the Territorial Force, and who had now volunteered for service anywhere, received only 15*s*. 6*d*. a day; and whether he could see a way to remedy the grievance of the Territorial service by putting them on the same scale of pay as the surgeons in the new army.—Mr. H. BAKER: I would refer the honourable Member to the answer which I gave to the honourable Member for the Bridgwater Division of Somerset on August 27th last.[1]

Pay of Indian Medical Service Officers on Active Service.

Mr. RAWLINSON asked the Under Secretary for India whether his attention had been called to the reduced rate of pay of doctor of medicine officers of the Indian Medical Service who were now on active service with field ambulances; and whether he could see his way to raising their pay to the amount which they would receive if they were working for the Indian Medical Service in India during times of peace.—Mr. C. ROBERTS wrote in reply: Subject to certain exceptions which are at present under discussion with the Government of India, officers of the Indian Medical Service withdrawn from their ordinary duty for active service receive not less than the military pay and allowances ordinarily attached to their rank and position, and in some cases special higher rates provided for field service appointments. The Secretary of State recognises that the rules may sometimes entail loss of emoluments to Indian Medical Service officers withdrawn from civil appointments, but liability to recall to military duty is a well-understood condition of civil employment in the case of the Indian Medical Service, and he sees no sufficient reason for modifying the rules.

MONDAY, FEB. 8TH.

Antityphoid Inoculation in the British Army.

Mr. PETO asked the Under Secretary for War whether he could furnish particulars of any case of death from inoculation against typhoid fever.—Mr. TENNANT replied: So far as the War Office is aware there has been only one death which can be in any way connected with inoculation. This case was that of Corporal Nichols, of the 3rd Battalion (Reserve) City of London Regiment. I stated in this House on Nov. 27th last that the cause of death was pneumonia, but when the death certificate was received it was seen that the cause was given as (1) antityphoid vaccination and (2) pneumonia. The case has been investigated and submitted to Sir William Osler, who considers that death was due to an eight miles march which the man took within 24 hours after inoculation and not to the inoculation directly. Instructions have been given that care must be taken to see that men recently inoculated are not given hard work until their condition justifies their undertaking it without risk.

Mr. PETO asked the Under Secretary for War whether he could state the number of cases of typhoid, and deaths from typhoid, among inoculated men and uninoculated men in the Expeditionary Force from the commencement of the war to a recent date.—Mr. TENNANT answered: Of the 421 cases of typhoid in the present campaign among British troops 305 cases were in men who were not inoculated within two years. In the 421 cases there have been 35 deaths. Of these deaths 34 were men who had not been inoculated within two years. Only one death occurred among patients who were inoculated, and that man had only been inoculated once instead of the proper number of times—namely, twice.

Mr. CHANCELLOR asked the right honourable gentleman whether the punishment for refusing inoculation of men who had fought at the front by depriving them of the five days' leave to visit home which was granted to inoculated men was a form of influence and persuasion sanctioned by the War Office to induce men to undergo an operation which was not compulsory or legally enforceable and to which they had a conscientious objection; and whether men who stood upon the legal right guaranteed by the public announcements of the Minister for War were to be punished indefinitely for doing so by the refusal of the leave granted to others, or whether this action on the part of officers would at once be put an end to by a General Order issued from the War Office.—Mr. TENNANT said in reply: I am not aware of any case where a man returning from the front has been punished in the manner described in the question. The danger of infection being spread in the army by uninoculated men is considerable, and has to be guarded against by precautions being taken as regards granting them special leave. Any General Order will be in this sense.

The Health of the Army.

Speaking on the motion that the Speaker should leave the chair in order that the House might go into committee on army estimates, Mr. TENNANT (Under Secretary for War),

[1] THE LANCET, Sept. 5th, 1914, p. 677.

in the course of his observations, said: I should not like to conclude without saying a few words upon certain aspects of the medical treatment of the wounded in France. I do not think there is much that I can add to the narrative which I gave to the House in November last of the methods adopted by the Royal Army Medical Corps in bringing the wounded from the front to the clearing stations, thence to the base hospitals, and finally home here. Important as those functions are, the prevention of disease is even more important, and that is rightly regarded as the primary function of this corps. I think that I am right in saying that this is the first war in which we have been engaged in which an organised sanitary service has existed. We owe the establishment of this service to my noble friend Lord Haldane. Since its establishment we have been gradually perfecting its organisation during the last five or six years. When we look back to the fact that during the Napoleonic wars only 3 per cent. of deaths among our troops were due to wounds and 97 per cent. due to sickness or disease, and when we also remember the fact that during the Crimean War more deaths occurred from disease during the first three months than during the whole of the rest of the campaign, it is impossible to lay too much stress upon this preventive function of the Royal Army Medical Corps. How has this function been carried out? I have to thank my honourable friend the Member for the Holmfirth Division of Yorkshire (Mr. Arnold) for the very interesting and able report which he made to me after a visit which he paid to Paris, during which he got a great many figures. All the evidence which my honourable friend brought, and which comes to me officially, goes to show that by far the greatest amount of sickness amongst our soldiers at the present moment is due to the wet and the cold. Frost-bite and rheumatism are, I am sorry to say, very prevalent. We have issued from the War Office through the Army Medical Department a small leaflet to officers and non-commissioned officers telling them how to prevent frost-bite amongst their men. My honourable friend reports to me that, assuming the conditions of exposure of officers and men to be identical, frost-bite is three times as prevalent amongst the men as it is amongst the officers. I do not suppose that it is possible to assume that the conditions are quite identical, but you may be certain that the exposure of the men is not three times as great as that of the officers. My honourable friend presumes that this result is due to the officers having better boots, leggings, and equipment generally. If that is so, it proves that there is a certain amount of preventability of frost-bite, and I hope by the steps which we are now taking that this disease may be prevented to a larger extent than has been the case in the past.

The Question of Compulsory Inoculation.

Coming now to the question of enteric fever (continued the right honourable gentleman), I am glad to say that cases of this disease are luckily rare, and they have occurred almost entirely among the uninoculated. The evidence is accumulating in favour of making inoculation compulsory. This is one of those subjects which ought to be settled without prejudice. My honourable friend the Member for Holmfirth, who gave me this most interesting report, strongly holds that inoculation against typhoid ought to be made compulsory. It is for the House to say what they think upon this matter. I gave the House figures to-day on this subject in answer to a question, and they have been published in a leaflet to all soldiers with a prefatory note by the Secretary of State for War (Lord Kitchener), impressing upon all soldiers the great importance of inoculation.

Lord CHARLES BERESFORD: Does every soldier get one?

Mr. TENNANT: Yes, it is sent to every soldier.

Lord CHARLES BERESFORD: Is it put up in the recruiting offices?

Mr. TENNANT: Very likely. I have not time to go in detail into all the preventive measures taken by the Royal Army Medical Corps, but I should like to mention the sanitary squads, the water purifying sections, and the travelling hygiene and bacteriological laboratories, to which I drew attention in my speech in November. This is an entirely new feature, and these branches in particular are doing extraordinary and valuable work. Lastly, the Sanitary Commission sits at the War Office to advise the Secretary of State upon all matters relating to the health of the troops at home and abroad. What I have said relates to the army abroad, and it may be asked what we are doing for the health of our troops at home. Owing to the almost entire absence of the regular Army Medical Service engaged upon field operations certain difficulties have arisen, but thanks to the patriotic eagerness of the medical profession we have been able to obtain a high degree of efficiency. I cannot claim that complete efficiency has been achieved, but day by day the ideal is being approached. The new Army Medical Corps for the new armies are now in course of formation, and I believe they will be able to do excellent work should the occasion arise.

Vaccination of Soldiers.

Mr. TENNANT informed Mr. THOMAS that it was not considered advisable to alter the present rules governing the vaccination of soldiers joining the army.

Territorial Medical Officers.

In reply to Mr. W. GUINNESS, Mr. BAKER (Financial Secretary to the War Office) said: There is no difference in the pay of officers holding temporary and permanent commissions in the Royal Army Medical Corps, Territorial Force. The rate for captain is 15*s.* 6*d.* and for lieutenant 14*s.* a day.

Antityphoid Inoculation in Canadian Contingent.

Mr. TENNANT informed Mr. PETO that 95 per cent. of all ranks of the Canadian Contingent had been inoculated against typhoid.

The Anti-inoculation Campaign.

Sir J. D. REES asked the Attorney-General whether the Government could and would proceed under the Defence of the Realm Act against persons who incite soldiers to decline to submit to antityphoid inoculation.—Sir JOHN SIMON replied: The matter is under the consideration of the military authorities.

Inoculation of Soldiers against Typhoid Fever.

In the course of the debate in committee of supply on army estimates, Mr. CHANCELLOR drew attention to the inoculation of troops. He said that assurances had been given in Parliament by representatives of the War Office that no compulsion should be applied to soldiers to compel them to undergo inoculation. Those assurances had not been reflected in certain instances in the action which had been taken by officers. They had, by depriving men of privileges and in other ways, sought to coerce them to submit to this operation against their wishes. He did not complain about the inoculation of troops, nor did he complain of proper and legitimate methods of persuasion. But he did object most strongly to the coercion and compulsion which had been applied to men who had conscientious objections, and he hoped that officers who exerted compulsion and coercion would be reprimanded. The man had a right to refuse to be inoculated.

Mr. G. H. ROBERTS stated that he had taken part in the recruiting meetings, and he had told men on certain occasions that the Government had given an assurance that inoculation was not compulsory. If it was made compulsory these men should have an opportunity to retire.

Sir HENRY CRAIK protested against the campaign which had been carried on against the inoculation of troops. Inoculation was carried out in the general interest of the health of the troops.

Dr. C. ADDISON (Parliamentary Secretary to the Board of Education) said that he had been asked by the Under Secretary for War to deal with the question of inoculation. Was this thing desirable in itself? Would it prevent the occurrence of typhoid fever amongst our troops abroad to a material extent? Would it reduce the strain on our men? That was the big question. Where inoculations were carried out with care the number of cases who did badly was infinitesimal. Even if a man did die in a particularly vulnerable moment, that would not prove that this was not a preventive against typhoid. We had a great force on the continent of Europe, greater than we ever had before, and after six months, including three months of the most atrocious weather imaginable, there had only been 421 cases of the disease. The fact that the figures were so small was a vindication of the policy of inoculation. It seemed strange how the disease had picked out the uninoculated men in a very careful way. The more the records of this remedy of inoculation were examined the better did it appear. It was never contended that there were no men who were inoculated who would not suffer from typhoid. In time the remedy might be so perfected that it might become absolutely perfect. He was not contending that it had proved perfect now. The point was this: Was it so much of a protection that it diminished disease in our troops abroad that it was worth doing? There had been 58,000 cases of enteric in the South African War. Up to the present in this war there had been 421. Whatever this was due to, it had at least happened, and let them continue this happy conjunction of affairs and hope that it would continue to happen. It was said that a good many men might have their consciences hurt by compulsion. Many people, however, had made it their business to go about spreading leaflets. "Is it patriotic to oppose the vaccination and inoculation of our soldiers?" That question was asked at the top of one of these leaflets. And the answer given was "Certainly it is." That was a campaign against antityphoid inoculation, but it was not against personal rights. After all, there might be in different parts of the country excess of enthusiasm on the part of officers who sincerely believed that the troops which they were now commanding would be safer inoculated than not. If an officer was taking a battalion out to the

front, and if he believed that the burden of transport would be less and that the fighting units at the front would remain more intact because the men were inoculated, one could understand a little excessive zeal on his part in getting the men inoculated. He hoped that honourable Members would not allow this grave question to be clouded over by trivialities. Let them look at it as a whole. What the Government were doing was designed to protect our men against this disease in France, and he was sure that every honourable Member would coöperate with the War Office in placing no undue obstacles in the way.

Mr. W. LONG thanked the honourable gentleman (Dr. Addison) for the stand he had taken on this important matter. The Opposition would support the Government in taking the strongest measures in securing the health of our troops in France. If the Government had given a pledge to recruits not to make inoculation compulsory, and if they thought a change of policy was required, then the change of policy should be made at once. Any men who thought that they were aggrieved by making inoculation compulsory should be given an opportunity of retiring or of being retained for home defence.

WEDNESDAY, FEB. 10TH.

Inoculation in the British Army.

In the further course of the debate in Committee of Supply on Army Estimates, Mr. TENNANT (Under Secretary for War) said that evidence was accumulating in favour of the inoculation of our troops against typhoid. In the South African War, out of 21,000 deaths, 8000 were from enteric fever. The Indian figures also were significant. In India, where the troops ran great risk of disease, over 90 per cent. of the army were without compulsion inoculated. In pre-inoculation days up to 2000 cases of typhoid used to occur annually in India, whereas in 1912 the number was only 118 and in 1913 only 85. As to making inoculation compulsory for future recruits and allowing those who had enlisted under the supposed guarantee of the War Office liberty to remain in the army for home defence only, he could give no answer. The matter was under consideration, and he hoped to be able to give a definite answer shortly. The question between the honourable Member for Haggerston (Mr. Chancellor) and himself seemed to be not so much one of medical authority as one of discipline. It was said that whilst it was stated that inoculation was voluntary in fact, a soldier desiring to remain uninoculated was met by the commanding officers of certain units with a form of compulsion which it was almost impossible to resist. It would be almost impossible to persuade the honourable Member that these commanding officers had acted with the best possible motives, believing that the course adopted by the individual was likely to be prejudicial to the great bulk of the men under his command. That was really the whole point. These commanding officers had gone beyond any leave which they had from the War Office. He had caused instructions to be issued to all commanding officers to say that action such as the honourable Member (Mr. Chancellor) had brought to his notice was undesirable, and would, he hoped, not be repeated. He (Mr. Tennant) did not disguise that he felt that there was a real danger in men going on leave uninoculated and returning uninoculated, because they might bring infection to a body of troops. Lord Kitchener felt this so strongly that he was about to issue instructions that leave must be sparingly granted to men who declined to be inoculated.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BIRD, G. A., M.B., B.Sc., B.Sc. Lond., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

BLUNT, A. L., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Surgeon at St. Thomas's Hospital.

BONSER, G. A. G., M.R.C.S., L.R.C.P. Lond., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

BURT, W., M.R.C.S., L.R.C.P. Lond., has been appointed Senior Obstetric House Physician at St. Thomas's Hospital.

CRANSTOUN, G., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Physician at St. Thomas's Hospital.

DAVIES, J. C., M.B., B.Ch. Oxon., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

DOYNE, P. G., M.B., B.C. Oxon., F.R.C.S. Eng., has been appointed Senior Ophthalmic House Surgeon at St. Thomas's Hospital.

ELLWOOD, V. T., M.B., B.Ch. Oxon., has been appointed Junior Obstetric House Physician at St. Thomas's Hospital.

GIMBLETT, C. L., M.B., B.C. Cantab., has been appointed Resident House Surgeon at St. Thomas's Hospital.

GLADSTONE, F. C., M.B., B.Ch. Oxon., has been appointed Resident House Physician at St. Thomas's Hospital.

HEBERT, G. T., M.B., B.Ch. Oxon., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

HUNTER, ANDREW, M.B., Ch.B. Edin., has been appointed to the Chair of Pathological Chemistry in the University of Toronto.

JONES, C. O. H., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Physician at St. Thomas's Hospital.

KENNEDY, F. J. M., L.R.C.P. & S. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Mountrath District of Queen's County.

MACKENZIE, T. C., M.B., Ch.B. Glasg., has been appointed Assistant Medical Superintendent of the Bury and District Joint Hospital.

MCMILLAN, K. H., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Surgeon at St. Thomas's Hospital.

MARSHALL, W. H., M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon at St. Thomas's Hospital.

MILES, S. H., M.R.C.S., L.R.C.P. Lond., has been appointed Junior Ophthalmic House Surgeon at St. Thomas's Hospital.

MILLIGAN, D. S. B., M.R.C.S., L.R.C.P. Lond., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

RAINE, R. T., M.R.C.S., L.R.C.P. Lond., has been appointed Casualty Assistant at St. Thomas's Hospital.

ROMANIS, W. H. C., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Surgeon at St. Thomas's Hospital.

SAI, P., M.R.C.S., L.R.C.P. Lond., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

SHARP, J. E., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Physician at St. Thomas's Hospital.

SHELLEY, L. W., M.R.C.S., L.R.C.P. Lond., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

SPARROW, J. A. G., M.B., B.Ch. Oxon., has been appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

STIELL, W. F., M.R.C.S., L.R.C.P. Lond., has been appointed Casualty Assistant at St. Thomas's Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ASHTON-UNDER-LYNE DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—Senior House Surgeon. Salary £140 per annum, with board, residence, washing, &c.

BARROW-IN-FURNESS, NORTH LONSDALE HOSPITAL.—House Surgeon. Salary £150 per annum, with residence, board, and laundry.

BEDFORD COUNTY HOSPITAL.—Temporary House Surgeon.

BENENDEN, KENT, NATIONAL SANATORIUM.—Medical Superintendent. Salary £350 per annum, with house.

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL, Woodchurch-road.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

BIRKENHEAD BOROUGH HOSPITAL.—Senior House Surgeon. Salary £120 per annum, with board and laundry.

BIRMINGHAM CITY MENTAL HOSPITAL, Rubery-hill.—Female Junior Assistant Medical Officer. Salary £200 per annum, with apartments, board, laundry, &c.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £240 per annum, with apartments, fire, lights, and attendance.

BLACKBURN AND EAST LANCASHIRE ROYAL INFIRMARY.—House Surgeons, Senior and Junior. Salaries £150 and £130 per annum, with board, residence, and laundry.

BOURNEMOUTH, ROYAL NATIONAL SANATORIUM FOR CONSUMPTION AND DISEASES OF THE CHEST.—Resident Medical Officer. Salary £300 per annum, with board, residence, and laundry.

BRADFORD CHILDREN'S HOSPITAL.—House Surgeon. Salary £120 per annum, with board, residence, and laundry.

BRADFORD CITY.—Two positions on Staff of Medical Officer of Health in connexion with scheme of Child Welfare. Salary £350 per annum.

BRIGHTON, ROYAL SUSSEX COUNTY HOSPITAL.—House Physician. Salary £100 per annum, with apartments, board, and laundry. Also Junior House Surgeon and Assistant House Surgeon with charge of beds. Salaries £30 per annum, with apartments, board, and laundry.

BRISTOL EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

BRISTOL GENERAL HOSPITAL.—Senior House Surgeon. Salary at rate of £200 per annum, with board, residence, &c.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Female House Physician. Salary £100 per annum, with board, rooms, attendance, and laundry.

BRISTOL ROYAL INFIRMARY.—Throat, Nose, and Ear House Surgeon. Salary at rate of £120 per annum, with board, apartments, and laundry.

BURNLEY, VICTORIA HOSPITAL.—House Surgeon. Salary £135 per annum, with residence, board, and washing.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, residence, and washing.

CANCER HOSPITAL, Fulham-road, S.W.—House Surgeon for six months. Salary £100 per annum.

CANTERBURY, KENT COUNTY ASYLUM, Chartham.—Third Junior Assistant Medical Officer. Salary £250 per annum, with quarters, board, washing, &c.

CARMARTHEN JOINT COUNTIES ASYLUM.—Temporary Second Assistant Medical Officer. Salary at rate of £200 per annum, with board, lodging, washing, &c.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street, W.C.—House Surgeon. Salary at rate of £50 per annum, with board and residence.

CHESTER, CITY AND COUNTY OF THE CITY OF.—Assistant Medical Officer of Health. Salary £300 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £75 per annum, with board, residence, and washing. Also Resident Medical Officer. Salary £200 per annum, with board, &c.

COLCHESTER, ROYAL EASTERN COUNTIES' INSTITUTION FOR IMBECILES AND THE FEEBLE-MINDED.—Medical Officer. Salary at rate of £200 per annum, with board, apartments, attendance, and washing.

COVENTRY, COVENTRY AND WARWICKSHIRE HOSPITAL.—House Physician. Salary £110 per annum, with rooms, board, washing, and attendance.

DAGENHAM TEMPORARY SANATORIUM, Dagenham, Essex.—Resident Medical Officer, unmarried. Salary at rate of £300 per annum, and all found.

DERBYSHIRE COUNTY COUNCIL.—Tuberculosis Dispensary Officers. Salary £400 per annum.

DEVIZES, WILTS COUNTY ASYLUM.—Assistant Medical Officer. Salary £250 per annum, with apartments, board, attendance, and laundry.

DEVONPORT ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board and laundry.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Also Assistant House Surgeon for six months. Salary £150 and £120 per annum respectively, with board, residence, attendance, and washing.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Female Resident House Surgeon. Salary £100 per annum.

ECCLES AND PATRICROFT HOSPITAL.—House Surgeon, unmarried. Salary £70 per annum, with board, lodging, and washing.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Senior House Surgeon for 12 months. Also House Physician and Assistant House Surgeon for six months. Salary at rate of £250 per annum for senior post and £150 for junior posts, with board, apartments, and washing.

GLAMORGAN COUNTY COUNCIL.—Medical Officer for Inspection of Children in Public Elementary Schools. Salary at rate of £300 per annum.

GLASGOW, ROYAL SAMARITAN HOSPITAL FOR WOMEN.—Resident Medical Officer. Salary £25 per annum.

GOVERNMENT LYMPH ESTABLISHMENT, Colindale-avenue, Hendon, N.W.—Temporary Assistant Bacteriologist. Salary at rate of £300 per annum.

HALIFAX ROYAL INFIRMARY.—Second and Third House Surgeons, unmarried. Salary £120 and £100 per annum respectively, with residence, board, and washing.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—Assistant Casualty Medical Officer, unmarried, for six months. Salary £30, with board, residence, &c.

HULL, VICTORIA CHILDREN'S HOSPITAL, Park-street.—House Surgeon and Assistant House Surgeon. Salary £60 and £50 per annum respectively, with board and laundry.

KENSINGTON TUBERCULOSIS DISPENSARY, 119, Ladbroke-grove, W.—Temporary Medical Officer. Salary at rate of £500 per annum.

LABORATORIES OF PATHOLOGY AND PUBLIC HEALTH.—Bacteriologist. Salary £170 per annum.

LINDSEY (LINCOLNSHIRE) COUNTY COUNCIL.—Combined Temporary Assistant Tuberculosis and Assistant School Medical Officers. Salary at rate of £300 per annum.

LIVERPOOL INFIRMARY FOR CHILDREN.—Two Resident House Physicians for six months. Salary £30 each, with board and lodging.

LONDON HOSPITAL, E.—Assistant Surgeon.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, attendance, and washing.

MANCHESTER, MONSALL FEVER HOSPITAL.—Second and Third Medical Assistants. Salary £175 and £150 per annum respectively, with board, lodgings, and washing.

MANCHESTER, VICTORIA MEMORIAL JEWISH HOSPITAL, Cheetham.—Female Resident Medical Officer for six months. Salary at rate of £100 per annum, with rooms, board, and laundry.

METROPOLITAN BOROUGH OF HACKNEY AND STOKE NEWINGTON.—Tuberculosis Officer. Salary at rate of £500 per annum.

MIDDLESEX COUNTY ASYLUM, Napsbury, near St. Albans.—Temporary Assistant Medical Officer. Salary 6 guineas per week, with board, lodging, washing, and attendance.

MILE END OLD TOWN INFIRMARY.—Senior Assistant Medical Officer and Junior Assistant Medical Officer. Salary £200 and £150 per annum respectively, with board, lodging, and washing.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON, Greenwich-road, S.E.—Junior House Surgeon for six months. Salary £85 per annum, with board, residence, and laundry.

NEWPORT (MON.). ROYAL GWENT HOSPITAL.—Resident Medical Officer. Salary for first six months at rate of £100 per annum, second six months £125, and third six months £150, with board, residence, and laundry.

NORFOLK EDUCATION COMMITTEE.—Assistant Medical Officer. Salary £300 per annum.

NORTHAMPTON COUNTY ASYLUM.—Second Assistant Medical Officer. Salary £250 per annum, with board, &c.

NOTTINGHAM GENERAL HOSPITAL.—Senior House Physician. Salary £120 per annum, with board, residence, and laundry. Also Assistant House Physician for six months. Salary at rate of £100 per annum, with board, residence, and laundry.

OLDHAM ROYAL INFIRMARY.—Second House Surgeon. Salary at rate of £120 per annum, with board, residence, and laundry.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Surgeon. Salary at rate of £80 per annum, with board, residence, and washing.

PADDINGTON INFIRMARY 285, Harrow-road, Paddington, W.—Two Assistants to Medical Superintendent of Infirmary and Medical Officer of Workhouse for six months. Salary at rate of £250 per annum, with board, lodging, and washing.

PAISLEY, ROYAL ALEXANDRA INFIRMARY.—Resident House Physician.

PRESTON ROYAL INFIRMARY.—Assistant Resident Medical and Surgical Officer. Salary £120 per annum, with board, residence, and laundry.

PORTSMOUTH ROYAL HOSPITAL.—House Surgeon for six months. Salary £150 per annum, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Assistant Surgeon.

RHONDDA URBAN DISTRICT COUNCIL.—Temporary Assistant Medical Officer of Health and School Medical Officer. Salary at rate of £300 per annum.

ROYAL ARMY MEDICAL CORPS (TERRITORIALS), THIRD 1ST HOME COUNTIES FIELD AMBULANCE (Maidstone).—Seven Medical Men as Officers.

ROYAL DENTAL HOSPITAL OF LONDON, Leicester-square.—Joint Afternoon House Anæsthetist. Salary £24 per annum.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, S.E.—Second Resident Medical Officer. Salary at rate of £100 per annum, with board and washing. Also Temporary Honorary Assistant Physician to Out-patients.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.—Junior Resident Medical Officer. Salary at rate of £90 per annum, with board, residence, and laundry.

ST. MARY ISLINGTON INFIRMARY, Highgate Hill, N.—Junior Assistant Medical Officer. Salary £140 per annum, with board, residence, &c.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £75 per annum, with board, lodging, and washing.

SALFORD COUNTY BOROUGH.—Assistant Tuberculosis Officer. Salary £350 per annum.

SALFORD ROYAL HOSPITAL.—Casualty House Surgeon. Salary at rate of £100 per annum, with board and residence.

SALISBURY GENERAL INFIRMARY.—House Surgeon and Assistant House Surgeon, unmarried. Salary £100 and £75 per annum respectively, with apartments, board, lodging, and washing.

SHEFFIELD CHILDREN'S HOSPITAL.—House Surgeon. Salary £150 per annum, with board and residence.

SHEFFIELD CITY HOSPITALS FOR INFECTIOUS DISEASES AND TUBERCULOSIS.—First Assistant Medical Officer, Second Assistant Medical Officer, and Third Assistant Medical Officer. Salary £250, £225, and £200 per annum respectively, with apartments, rations, laundry, and attendance.

SHEFFIELD ROYAL HOSPITAL.—Female Assistant House Surgeon and Assistant House Physician. Salary £85 and £80 per annum respectively, with board, residence, and washing.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Junior House Surgeon for six months. Salary at rate of £120 per annum, with rooms, board, and washing.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £115 per annum, with residence, board, and washing.

STOCKPORT INFIRMARY.—Junior House Surgeon. Salary £100 per annum, with board, washing, and residence.

SWANSEA UNION INSTITUTION.—Resident Assistant Medical Officer. Salary £296 per annum.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—Senior House Surgeon. Salary £120 per annum, with board, lodging, and laundry.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon, unmarried. Salary £150 per annum, with rooms, board, and washing.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, &c.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician for six months. Salary £40, with board and lodging.

WAKEFIELD, CITY OF.—Temporary Assistant Medical Officer of Health. Salary £300 per annum.

WALSALL AND DISTRICT HOSPITAL.—Assistant House Surgeon and Anæsthetist. Salary £110 per annum, with board, residence, and laundry.

WANDSWORTH UNION INFIRMARY, St. John's-hill, Clapham Junction, S.W.—Assistant Medical Officer, unmarried. Salary at rate of £5 5s. weekly, with board, lodging, and washing.

WARRINGTON INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary at rate of £200 per annum, with board, apartments, and laundry.

WEST BROMWICH AND DISTRICT HOSPITAL.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £120 per annum respectively, with residence, board, and laundry.

WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, PARALYSIS, AND EPILEPSY, 73, Welbeck-street, W.—Resident House Physician for six months. Salary at rate of £100 per annum.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—Junior House Surgeon. Salary at rate of £100 per annum, with board, residence, and washing.

WHITECHAPEL UNION INFIRMARY, Vallance-road, E.—Second Assistant Resident Medical Officer. Salary £200 per annum, with rations, apartments, and washing.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Female Junior House Surgeon. Salary £130 per annum, with board, apartments, and washing. Also House Surgeon. Salary £170 per annum, with board, apartments, and washing.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Lerwick, in the county of Shetland; at Newent, in the county of Gloucester; and at Stewartstown, in the county of Tyrone.

Births, Marriages, and Deaths.

BIRTHS.

BIDWELL.—On Feb. 4th, at Worthing-road, Southsea, the wife of Fleet-Surgeon Lawrence Bidwell, R.N., of a son.

HAYDEN.—On Feb. 4th, at Wymering-mansions, W., the wife of Captain A. F. Hayden, M.B., F.R.C.S., I.M.S. (ret.), of a son.

JORDAN.—On Feb. 4th, at 13, Upper Wimpole-street, W., to Dr. and Mrs. Alfred C. Jordan, a son.

MARRIAGES.

CUNNINGHAM—NEAL.—On Feb. 2nd, at St. Augustine's, Highbury New Park, Frederick Hugh Lester Cunningham, M.R.C.S., L.R.C.P., R.N., to Marguerite Isabel, younger daughter of Mr. and Mrs. John Neal.

HILL—TROLLOPE.—On Feb. 6th, at All Saints', Banstead, Lieutenant F. T. Hill, R.A.M.C., to Ruth Madeline, eldest daughter of Howard W. Trollope, of Banstead, Surrey.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

DANGEROUS FADS.

To the Editor of THE LANCET.

SIR,—I was really taken aback at seeing in one of the recent numbers of *Punch* the advertisement of a baseless campaign that is being waged against vaccines in general and antityphoid in particular.

To us who hold England up as an example, it is hard to realise that there should still exist in a civilised country like yours people ignorant enough to publish and sustain the senseless principles contained in the aforesaid advertisement. And what I think makes that calumnious campaign still worse, under the present circumstances, is the anti-patriotic terms in which it is written.

I think it is about time English people woke up against many such dangerous fads as have been taking root during recent years, such as this one, the antivivisection, and even vegetarianism, and the abuse of other diet fads. Let us hope now that there are more serious things to turn one's thoughts to people will give up brooding over such nonsensical stuff.

I am, Sir, yours faithfully,

Oviedo, Feb. 3rd, 1915. JAMES B. VILIESID.

ANTIFORMIN.

Mr. Walter J. Matthews, of the laboratory department at the Bristol Municipal Tuberculosis Dispensaries, points out that a perfectly efficient substitute for antiformin hitherto supplied from Germany may be made by passing chlorine into 15 per cent. sodium hydrate to nearly saturation. The chlorine may be prepared by adding pure hydrochloric acid to manganese dioxide. To make one litre 1 lb. of pure acid (specific gravity 1·16) and about 6 oz. of manganese dioxide are needed. The manganese dioxide is placed in a large flask and the acid gradually added through a thistle funnel, warming very gently. The chlorine is carried by a delivery tube to the bottom of the soda solution, which is placed in a tall bottle. Enough chlorine has been added when the soda solution acquires the colour of lemonade. The cost of making one litre works out, on Mr. Matthews's estimate, at about 1*s.* 1*d.* Antiformin is used in the bacteriological diagnosis of tuberculosis, and its value in this direction has been referred to many times in our columns.

VERMIN IN THE TRENCHES.

To the Editor of THE LANCET.

SIR,—In 1902 or 1903 I read in *Blackwood's Magazine* extracts from the diary of a planter who was wandering alone for several days during the Indian Mutiny. He became infested with pediculi, and after some days of discomfort hit on the idea of shredding a cheroot and steeping it in water. The application of this "tobacco-water" to his body rid him of a nuisance. This might be worth a trial and could, I think, be easily done in the trenches. An ounce of shag soaked in a quart of water for some hours ought to make a fairly strong infusion. One would not expect it to kill the ova, however.

Norman Walker in his "Introduction to Dermatology" writes about pediculi corporis: "Jamieson says that a small bag of sulphur worn round the neck next the skin acts as a practical 'charm.'"

I am, Sir, yours faithfully,

Feb. 6th, 1915. M.R.C.S. & L.R.C.P.

ATTACHMENTS TO TELEPHONES.

THE following notice in the "London Telephone Directory" may serve as a warning to future inventors, and so prevent fruitless efforts of ingenuity:—"Attention is drawn to the fact that subscribers are being induced to purchase appliances for attachment to telephones on the ground that they improve the service or have some hygienic advantage. As in nearly all cases these attachments have the effect of either damaging the apparatus or impairing its efficiency—in many cases both—subscribers are reminded that under the conditions of their telephone service the use of such appliances or attachments is, in general, prohibited. The sale to the public of certain appliances which have no such prejudicial effect has been sanctioned by the Post Office, and subscribers should, before purchasing any telephone attachments, satisfy themselves that their use has received official sanction. It is the duty of the Post Office engineers to remove any attachments which have not been officially approved."

FEES UNDER THE MENTAL DEFICIENCY ACT.

"DEFICIT" writes: "I shall be obliged if any of your readers can give me an idea as to the fees one should ask as medical officer under the Mental Deficiency Act."

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Prof. W. A. Bone and others: Gaseous Combustion at High Pressures.—Prof. W. M. Hicks: The Orbits of a Charged Particle Round an Electric and Magnetic Nucleus.—Mr. S. Chapman: The Lunar Diurnal Magnetic Variation and its Change with Lunar Distance (communicated by Sir F. W. Dyson).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

WEDNESDAY.

SECTION OF THE HISTORY OF MEDICINE (Hon. Secretaries—Raymond Crawfurd, Leonard G. Guthrie): at 5 P.M.

At 4.30 P.M. Sir William Osler will show a collection of Astruc's works, including his Genesis.

Dr. J. D. Rolleston: Lucian and Medicine. (Part II.)

Sir Alexander Simpson: Jean Astruc.

THURSDAY.

SECTION OF DERMATOLOGY (Hon. Secretaries—S. E. Dore, A. M. H. Gray): at 5 P.M.

Exhibition of Cases (at 4.30 P.M.):

Dr. G. Pernet: (1) Extensive Tertiary Syphilis in a Woman; (2) Extensive Tertiary Syphilis in a Male; (3) Dermatitis Factitia.

Mr. J. E. R. McDonagh: Notes of a Skin Disease of Probable Protozoal Origin, with slides.

Dr. S. E. Dore: Favus of Glabrous Skin, with microscopical specimen and cultures.

Dr. Knowsley Sibley: Scleroderma.

Dr. Graham Little: (1) Multiple Tumours. (2) Fibro-sarcomata (private patient); (2) Angioma Serpiginosum (?); (3) Erythema ab igne (?).

FRIDAY.

SECTION OF OTOLOGY (Hon. Secretaries—W. M. Mollison, E. D. D. Davis): at 5 P.M.

Discussion:

On Tuberculosis of the Auditory Apparatus.

The following will take part in the discussion:—Sir William Milligan, Mr. Lake, Mr. J. S. Fraser, Mr. Hugh E. Jones, Mr. C. E. West.

Specimens (at 4.15 P.M.):

Will be shown by Mr. A. H. Cheatle, Mr. J. S. Fraser, Mr. G. J Jenkins, Mr. Wyatt Wingrave, Mr. E. D. D. Davis, and others.

Mr. W. M. Mollison (9, Upper Brook-street, W.) will be glad to hear from members wishing to show specimens or to take part in the discussion.

SECTION OF ELECTRO-THERAPEUTICS (Hon. Secretaries—S. Gilbert Scott, E. P. Cumberbatch): at 8.30 P.M.

Discussion:

On the Electrical Treatment of Wounds, Sinuses, Frost-bite, and Sprains, considered more particularly in Relation to the Present War.

Exhibition of Skiagrams.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY.—4.30 P.M., Cases sent for Consultation. Demonstration of Pathological Specimens. Clinical Cases will be shown by Dr. M. Dockrell, Dr. J. L. Bunch, Dr. W. K. Sibley, Dr. E. G. Reeve, Dr. J. L. Phibbs, and Dr. S. Gooding. 5 P.M., Paper:—Dr. W. K. Sibley: The Treatment of Diseases of the Skin and Mucous Membranes with Carbon Dioxide Snow.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.

WEDNESDAY.—8 P.M., Presidential Address:—Prof. G. Sims Woodhead: Some of the Micro-biological Problems of the Present War.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—8.30 P.M., Paper:—Prof. W. J. Simpson: The War and Cholera.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY.—4 P.M., Hunterian Oration:—Sir W. Watson Cheyne, Bart. (President).

WEDNESDAY.—5 P.M., Hunterian Lecture:—Prof. H. Blakeway: The Operative Treatment of Cleft Palate.

FRIDAY.—5 P.M., Hunterian Lecture:—Prof. F. C. Pybus: Some Infections of the Tonsil.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patient (Mr. E. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Gynæcological (Dr. J. B. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. Howell Evans); Nose, Throat, and Ear (Mr. H. D. Gillies). X Rays and Electrical Methods (Dr. Metcalfe). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting). 4.30 P.M., Clinical Demonstration:—Mr. E. Gillespie: Selected Surgical Cases.

WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. B. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson); X Rays and Electrical Methods (Dr. Metcalfe)

FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. E. Gillespie); Eye (Mr. R. P. Brooks).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.

TUESDAY.—10 A.M., Dr. Owen: Demonstration of Cases in Wards. 12 noon, Mr. T. Gray: Demonstration of Fractures, &c. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 11 A.M., Mr. Souttar: Demonstration of Minor Operations. 12 noon, Lecture:—Mr. Souttar: Abdominal Diagnosis. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 12 noon, Lecture: Dr. G. Stewart: Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12.15 P.M., Lecture:—Dr. Bernstein: Applied Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 12 noon, Lecture:—Mr. Souttar: Surgical Anatomy of the Abdomen. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

TUESDAY.—3 P.M., Prof. C. S. Sherrington: Muscle in the Service of Nerve. (Lecture V.)
THURSDAY.—3 P.M., Dr. P. C. Mitchell: Zoological Studies: War and Evolution—Struggle of Species. (Lecture II.)

MANCHESTER HOSPITALS POST-GRADUATE CLINICS.

THURSDAY.—ANCOATS HOSPITAL, Mill-street.—4.30 P.M., Medical and Surgical Cases.

For further particulars of the above Lectures, &c., see Advertisement Pages.

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THE INDEX TO THE LANCET.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Feb. 10th, 1915.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Feb. 4	29·76	SSW	...	74	53	45	46	48	Overcast
,, 5	29·84	S.W.	0·43	81	53	45	44	46	Fine
,, 6	30·47	S.	...	82	50	45	44	45	Raining
,, 7	29·78	S.W.	0·22	53	46	43	43	44	Overcast
,, 8	29·73	S.	0·45	75	48	39	38	40	Fine
,, 9	29·35	S.W.	0·04	74	47	40	40	40	Raining
,, 10	29·51	S.W.	...	73	48	39	39	40	Fine

The following magazines, journals, &c., have been received:—Therapeutic Gazette, American Journal of Orthopedic Surgery, Medical Review, Public Health, Edinburgh Medical Journal, Post-Graduate, Ophthalmology, Archives of Roentgen Ray, Birmingham Medical Review, Canadian Medical Association Journal, Proceedings of the Royal Society of Medicine, School Hygiene, Journal of Tropical Medicine and Hygiene.

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